

MARINE PROTECTION, RESEARCH, AND SANCTUARIES ACT OF 1972

HEARING
BEFORE THE
SUBCOMMITTEE ON OCEANS AND ATMOSPHERE
OF THE
COMMITTEE ON COMMERCE
UNITED STATES SENATE
NINETY-FOURTH CONGRESS
FIRST SESSION
ON
MARINE PROTECTION, RESEARCH, AND SANCTUARIES ACT OF 1972

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MARINE PROTECTION, RESEARCH, AND SANCTUARIES ACT OF 1972

TUESDAY, MAY 20, 1975

U.S. SENATE,
COMMITTEE ON COMMERCE,
SUBCOMMITTEE ON OCEANS AND ATMOSPHERE,
Washington, D.C.

The subcommittee met at 10:20 a.m. in room 1202, Dirksen Senate Office Building, Hon. Ernest F. Hollings (chairman of the subcommittee) presiding.

OPENING STATEMENT BY SENATOR HOLLINGS

Senator HOLLINGS. This morning the Senate Commerce Committee is holding an oversight hearing to review and appraise the activities of those Federal agencies charged with responsibility for carrying out the Marine Protection, Research, and Sanctuaries Act of 1972.

The act, commonly referred to as the Ocean Dumping Act, was designed to regulate the dumping of all types of materials into ocean waters and to prevent or strictly limit the dumping into ocean waters of any material which would adversely effect human health, welfare, or the marine environment. Since the passage of the act, an international convention on the dumping of wastes and other materials has been developed and has been ratified by the United States. The Ocean Dumping Act so accurately anticipated the substance of the Convention that only minor amendment was needed to bring the act into full compliance with it.

The principal responsibility for regulating ocean dumping has been placed with the Environmental Protection Agency which has established and administers an ocean dumping permit program and which has final review and control of all dumping activities falling under the jurisdiction of the act. The Department of Commerce, through NOAA, is given the primary research and monitoring responsibility concerning the effects of ocean dumping and other man-induced changes on the marine environment. The Corps of Engineers has responsibility for issuing permits for the disposal of dredge spoil which accounts for more than 85 percent of all materials currently dumped, although the Corps' permits are subject to EPA's final review and approval. The Coast Guard is responsible for the monitoring and surveillance of dumping activities.

Although many of the criticisms of and controversies over the implementation of the Ocean Dumping Act center on differing technical and scientific viewpoints, there is little we can do legislatively to

Staff member assigned to this hearing: James P. Walsh.

resolve legitimate scientific disagreement. However, we do seek to insure that the intent of Congress is being carried out under the act and that whatever money has been appropriated for implementation of the act is being used efficiently and productively.

The Marine Protection, Research and Sanctuaries Act has now been in effect for just over 2 years and title I of the act has already been extended for 1 year to enable the committee to conduct these oversight hearings. Further extension will depend on the findings and recommendations of this investigation. Representatives of the Federal agencies involved in carrying out the act are here as witnesses today. A representative of the National Wildlife Federation has unfortunately been unable to be present today due to a previous commitment, but they have provided us with a statement and other materials for inclusion in the record.

We are very pleased this morning to have as our first witness Brig. Gen. Kenneth E. McIntyre, Deputy Director, Civil Works Directorate, Office of the Chief of Engineers, Department of the Army.

We welcome you and your associates and we'll be glad to hear from you at this time.

STATEMENT OF BRIG. GEN. KENNETH E. MCINTYRE, DEPUTY DIRECTOR, CIVIL WORKS DIRECTORATE, OFFICE OF THE CHIEF OF ENGINEERS, DEPARTMENT OF THE ARMY; ACCOMPANIED BY DR. JOHN KEELEY, CORPS OF ENGINEERS WATERWAYS EXPERIMENT STATION; AND WILLIAM HEDEMAN, OFFICE OF COUNSEL, OFFICE OF THE CHIEF ENGINEERS

General McIntyre. Thank you very much, Mr. Chairman.

I am Brig. Gen. Kenneth E. McIntyre, Deputy Director of Civil Works, Office of the Chief of Engineers, Department of the Army. I have on my right Dr. John Keeley of the Corps of Engineers Waterways Experiment Station who is affiliated with the corps' dredged material research program; and on my left is William Hedeman from the Office of Chief Engineers; plus other staff members in the audience.

I appreciate the opportunity to testify on behalf of the Chief of Engineers regarding the Corps of Engineers' implementation of the Marine Protection, Research, and Sanctuaries Act of 1972, which I shall hereafter refer to as Public Law 92-532.

Approval of Public Law 92-532 authorized necessary regulation over the transporting and dumping of material into ocean waters, and provided the primary statutory basis for the Federal effort to control such activities. Public Law 92-532 vests responsibility for regulating the discharge of material, other than dredged material, with the Environmental Protection Agency. Section 103 of Public Law 92-532 vests responsibility in the Corps of Engineers, in cooperation with EPA, for authorizing the transportation of dredged material for the purpose of dumping it in the ocean waters. Public Law 92-532 singled out disposal activities associated with dredged material because in most instances dredged material does not have the characteristic effects of society's pollutants.

Following approval of Public Law 92-532 the Corps published a proposed regulation in the Federal Register on May 10, 1973. This regulation prescribed the policies and procedures to be followed in

processing permit applications for proposed activities in navigable or ocean waters, including transportation of dredged material for disposal in ocean waters. This regulation also served as interim guidance for our field offices during the 11-month period required to receive and evaluate comments concerning the regulation.

The Corps published its final regulation for this permit program on April 3, 1974. Dredged material disposal activity of any Federal agency other than the corps is governed by this regulation to the same extent as a non-Federal activity. Such Federal disposal activities thus require a corps permit in the same manner as any disposal activity by a non-Federal interest.

Section 103(e) of Public Law 92-532 allows the Secretary of the Army to issue regulations for the ocean disposal of dredged material associated with Federal projects undertaken by the corps. Accordingly, the corps published final regulations in the Federal Register on July 22, 1974, to cover corps projects involving ocean disposal. These regulations require consideration of the same criteria and factors which the corps applies in processing permits for projects of other agencies and interests. This corps' action was commensurate with the legislative intent of section 103(e) and the recent holding in the case of *Save Our Sound Fisheries v. Callaway*, Civil Action No. 5297 (D.C.R.I., Mar. 5, 1974).

Both of the above-mentioned regulations require that a determination be made that any proposed dumping of dredged material will not adversely affect to an unreasonable degree human health, welfare, or amenities, or the marine environment, ecological system, or economic activities. Moreover, both regulations provide for notice and opportunity for public hearings. The regulations support the selection of ocean disposal sites in accordance with criteria promulgated by EPA on October 15, 1973, and published in title 40 of the Code of Federal Regulations, part 227. To the extent feasible, they require the use of recommended sites and the avoidance of EPA designated critical areas.

The regulations further provide, pursuant to the requirement of Public Law 92-532, for an independent determination by the corps of the need for the dumping. This determination is to be based on an evaluation of the potential effect which a denial of a permit would have on navigation, economic and industrial development, foreign and domestic commerce, and of other possible methods and locations for disposal.

Procedures have also been prescribed in the regulations for corps field offices to follow should there be disagreement with EPA in an individual permit case regarding its compliance with their criteria or restrictions.

Title III of Public Law 92-532 authorizes the Secretary of Commerce to designate as marine sanctuaries those areas of the ocean coastal waters which he determines necessary for the purpose of preserving or on the other hand, restoring for conservation, recreational, ecological, or esthetic values. The Secretary of Commerce may designate such sanctuaries after consulting with other interested Federal agencies, and with the approval of the President.

The corps' regulations require any permit applicant whose proposed activity will be located within a marine sanctuary to provide a certification from the Secretary of Commerce. The certification will state

that the applicant's proposed activity is consistent with title III and that the activity can be carried out within the regulations which have been promulgated by the Secretary of Commerce for that sanctuary. Failure to obtain such a certification will result in a denial of the permit.

All corps dredging projects, including those involving ocean disposal, are processed in accordance with corps regulations published on July 22, 1974. These regulations require extensive coordination procedures with other Federal and local agencies as well as the general public before dredging can proceed. Under a self-imposed constraint, all scheduled maintenance dredging projects will be the subject of an environmental assessment and, if required, an environmental impact statement prepared by January 1, 1976. These documents will, of necessity, assess the environmental impact on any ocean dumping site serving such projects. In a few cases, however, a separate environmental impact statement will be prepared for ocean disposal sites which serve additional purposes. An example of this latter case is the New York Bight area which involves the disposal of a variety of materials in a multiple disposal site.

In the area of research the major thrust is found in the 5-year dredged material research program (DMRP) being conducted by the corps waterways experiment station in Vicksburg, Miss. The DMRP is a \$30 million, congressionally authorized program which is specifically designed to answer the major questions as to the effects of dredged material disposal. The manpower, funding, and technical research finding resulting from this program places the corps in the position of world leadership in determining environmental effects of dredging and dredged material disposal. One important part of this program involves reviewing, developing, and testing bioassay techniques as a means of determining the actual effects resulting from open-water disposal of dredged material. In the DMRP, two of the 19 research tasks are determining the effects of dredged material disposal on water quality and aquatic organisms in both inland and ocean waters.

In general, these projects are determining (1) the short- and long-term fate of dredged material subsequent to disposal; (2) the effects of dredged material disposal on water quality; (3) the effects of dredged material disposal on aquatic organisms; and (4) what constitutes the pollution status of dredged material. Included in these projects are specific studies to determine the nature and extent of mobilization and biological uptake of pollutants from contaminated dredged material and to determine the fate and consequences of these contaminants as related to food chain transfers and bioaccumulation.

The DMRP is being supplemented and supported by corps field operating elements through field studies and specific local research projects. EPA and 12 other concerned Federal agencies are being kept fully informed of our research progress through semiannual inter-agency briefings, a monthly newsletter, an annual report, formal and informal briefings, and other information exchange programs.

A standard elutriate test was developed by the corps in conjunction with EPA to improve identification of any potential effect of dredged material disposal on water quality. The test procedural concept was published in the Federal Register on October 15, 1973, and has been

codified in title 40 of the Code of Federal Regulation, part 227, as part of the ocean dumping criteria mandated by the act. The standard elutriate test is a laboratory procedure in which sediment and water are mixed together and agitated to simulate the dredging process and thereby provides the best existing prediction of impact on water quality resulting from disposal operations. The test has the added advantage of being readily incorporative into a bioassay procedure to determine the effects on aquatic organisms. Research will continue on the standard elutriate test. Various improving modifications will be incorporated as additional laboratory techniques are developed and confirmed through field evaluations.

From the standpoint of permits, the corps is continuing to process section 103 actions under the procedures specified in our permit regulation published in final form on April 3, 1974. During fiscal year 1974, the corps received 97 applications for section 103 permits requesting disposal of dredged material beyond the territorial seas and 10 applications for disposal within the territorial seas. During this same period, 49 permits were issued for disposal beyond the territorial seas and 9 permits were issued for disposal within the territorial seas.

To date, the majority of applications for section 103 permits are the port users who need to perform either new dredging or maintenance dredging of berthing areas adjacent to congressionally authorized channel and harbor projects. Historically, ports were created in estuaries and rivers which served as harbors of refuge and did not have to have naturally deep waters. As ports and cities grew the lands surrounding the harbors were rapidly populated with commercial, industrial, and transportation complexes, leaving little or no room available for placing dredged material. As larger vessels were designed, with more economical ton-mile cost ratios, the main channels in the harbors were deepened by the corps in accordance with congressional authorization. The local port users provided for the dredging or excavation to gain access to their individual berths or docking areas.

With the technical resources available, and the requirement for a local sponsor to furnish a disposal area, the corps has generally been able to perform the harbor deepening or maintenance with little difficulty. However, individual port users and the local port authorities are now beginning to find that adequate upland disposal areas are no longer available. Typically, we find that upland areas are no longer available due to the growth of the city surrounding the port. Open water disposal in inland areas is being resisted actively by environmental interests. Although an alternative, the creation of islands composed of dredged material require an exceptionally long time period for intergovernmental coordination. Thus, ocean dumping often appears the only feasible, although expensive, alternative available to local port users. Difficulties, however, may still be confronted while trying to obtain the concurrence of all interested agencies, citizen groups, and individuals. The bottom sediment of an inner port is sometimes contaminated by actions beyond the applicant's control such as urban storm water runoff, inadequately treated sewage discharges, industrial discharges, or upstream agriculture and farm runoff.

The requirements of Public Law 92-532 are such that only a few are able to afford the expense of the ocean dumping alternative. For example, the only ocean dumping conducted in the corps southwestern division is that done by the corps—that would be along the Texas coastline, the gulf area—and in the New England area many marinas are operating with restricted slip depths due to the lack of disposal sites.

As I previously mentioned, the corps civil works projects affected by Public Law 92-532 primarily involve construction of new ship channels and periodic maintenance dredging of existing channels to insure their continued navigability essential for interstate and foreign commerce and national defense. It has been our practice to use the open ocean for disposal of the resulting dredged material.

The primary problems we are currently encountering in carrying out our mission to maintain the Nation's waterways involve concerns about damage to the marine environment and adverse effects on marine water quality and organisms that might be caused by the disposal of dredged material which contains certain quantities of materials labeled as pollutants. These concerns are almost always based on a fear of unknown consequences rather than a scientific knowledge of effects. Under EPA regulations, dredged material which cannot be proven to be unpolluted, must be classified as polluted. To date, it has been virtually impossible to establish acceptable proof to EPA that any dredged material other than clean sand or gravel is unpolluted. In addition, EPA criteria require that material not be disposed of in ocean waters unless it can be demonstrated, to their satisfaction, that the proposed disposal action will not have an unacceptable adverse impact on the environment.

The corps is thus devoting considerable effort and funds to discover if our proposed dredging activities and associated ocean disposal operations have such unacceptable adverse impacts. We are making detailed physical, chemical, and biological studies of disposal areas and have developed major research programs for monitoring the environmental effects of these operations. Completion of these studies will require a number of years. However, our preliminary findings, while not yet fully conclusive, strongly indicate that the disposal of dredged materials in ocean waters often has no significant adverse effect on the marine environment, and, in some cases, may be beneficial. An interesting example is along the east coast where lobsters have shown a preference for disposal areas as a habitat. Research results indicate that in many instances ocean disposal is environmentally preferable to land disposal despite past common assumptions to the contrary.

Public Law 92-532 essentially implies that an adverse impact is to be expected from all ocean dumping operations. This is simply not being demonstrated by ongoing research programs. For example, the dredged material from the Freeport Harbor, Tex., navigation project is classified by EPA as a pollutant since conclusive data are not available to prove otherwise. Accordingly, EPA has not concurred with the open gulf disposal of dredged material from most of the port's channels, notwithstanding that initial biological studies have indicated greater marine biotic productivity in the disposal area than in the surrounding undisturbed gulf.

In other areas of the country the corps has observed actual water quality improvement resulting from the ocean disposal of dredged material. As the dredged material settles to the bottom many of the pollutants in the ocean adhere to the temporarily suspended silt and clay particles. As a result, some pollutants, including heavy metals, are taken out of the water column during the dredging operation by becoming attached to deposited sediment.

Corps research efforts are continuing and we estimate that approximately 3 years of additional concentrated effort will be required to develop answers to certain major questions to the complete satisfaction of scientists and engineers in the many related fields. Firm answers to many of the questions are and will be published as they become available. In the interim, while additional corps and other research is being conducted, the corps does not feel that our disposal procedures should be substantially changed to the point of imposing excessively high costs to the dredging and disposal operation.

The Nation's waterways must continue to be open to navigation. Disposal costs of dredged materials have significantly increased. Moreover, the future is uncertain. The Corps is increasingly susceptible to litigation which could impair the navigability of our waterways notwithstanding that we are making every effort to bring our dredging program into full compliance with Public Law 92-532, the National Environmental Policy Act of 1969 and other pertinent requirements of law.

The corps has experienced conflicts resulting from the management of our traditional mission of maintaining the Nation's waterways while discharging our obligation under Public Law 92-532. There have been hardships and economic losses due to the act's implementation. We expected this because we realized that the national goal of restoring a clean environment and insuring man's activities are comparable with the environment would be expensive. Moreover, we recognize that it is a wise management practice to periodically evaluate past decisions and their effects. We are vigorously pursuing the question of the effects of ocean dredged disposal on the environment. However, we continue to believe that it would not be in the national interest to substantially limit disposal of dredged material at ocean sites just as research results are beginning to show that this activity often has minimal impact on the environment.

In accordance with Chairman Magnuson's letter of February 19, 1974, to Lieutenant General Gribble, the corps has provided the committee with answers to a number of questions amplifying on our responsibilities and experiences under the 1972 act. I have a copy of these questions and answers with me and request that they be considered for insertion in the record at this point.

Mr. Chairman, this completes my statement. I will be pleased to answer any questions that you and the members of the committee may have.

Senator HOLLINGS. General, those questions and answers will be included in the record.

I have some additional questions that I would like to submit to you. I would also ask you to submit in writing the exact changes in the law which you think would facilitate your job—not that we would agree with them, but in some instances maybe

there are too many checks having so many agencies involved. Somehow this might be streamlined. It's gotten to the point where no one can move, and I'd like to have the corps' recommendations to see what we could do to facilitate, accelerate, and streamline to some extent these procedures and still protect the environment.

General McINTYRE. We'll do that, sir.

Senator HOLLINGS. You're doing your own research but the NOAA's research has not been funded, so they are not keeping up with your particular research. Is that right?

General McINTYRE. I'd have to refer that to NOAA, sir. I do not know.

Senator HOLLINGS. Well, on your research, are there any scientific problem areas in dredge spoil classification on dredge disposal?

General McINTYRE. I'm going to ask Dr. Keeley to respond to that.

Dr. KEELEY. Yes, sir, I would answer yes to your question insofar as there are technical difficulties to classifying dredged material. I think it's primarily because of lack of research up until the last 2 or 3 years.

Senator HOLLINGS. And the corps' research program, you feel, now is on course and doing well at this time?

Dr. KEELEY. Yes, sir.

General McINTYRE. I might add in that connection, Senator, we are grateful that Congress has seen fit to fund that program to the extent that we have sought funds. It is an expensive program, \$30 million, but a very important one which will pay off many times over in the welfare of the country.

Senator HOLLINGS. All right, sir. Well, we thank you, General, and your associates very much and we will try to move along now this morning.

[The questions and answers referred to follow:]

U.S. SENATE,
COMMITTEE ON COMMERCE,
Washington, D.C., February 19, 1975.

Lt. Gen. WILLIAM C. GRIBBLE, Jr.,
Chief of Engineers, Department of the Army,
Washington, D.C.

DEAR GENERAL GRIBBLE: The Senate Commerce Committee is preparing for oversight hearings on the Marine Protection, Research, and Sanctuaries Act of 1972 (the Ocean Dumping Act). In order to more adequately prepare for comprehensive and adequate oversight, the Committee would appreciate receiving certain materials and answers to the attached questions regarding your agency's responsibilities under the Act.

I would appreciate your cooperation in expediting a response to this request as soon as possible. If you need further information about our needs, please contact James P. Walsh, Staff Counsel for the Committee at 224-9347. For your information and planning, we hope to hold hearings on the Act in mid-March.

I look forward to your response.

Sincerely,

WARREN G. MAGNUSON, *Chairman.*

CORPS OF ENGINEERS ANSWERS TO QUESTIONS

Question 1. A degree of inconsistency has been observed among the various Corps districts as far as compliance with the statutory notice requirement is concerned. (a) Are all Corps districts now adequately discharging their responsibilities concerning public notices and public hearings? (b) How great is the centralized guidance from Corps headquarters to its coastal districts in so far as

it pertains to implementation and interpretation of the Act and the final regulations? (c) How effective is the coordination and communication from coastal districts to Corps headquarters?

Response. As a result to the House hearings and concerns expressed by the representative of the National Wildlife Federation, the Chief of Engineers re-emphasized to field agencies the requirements expressed in 33 CFR 209.120 and 33 CFR 209.145 as regards Public Notices relating to both inland and ocean dumping permit applications and Corps projects. Instructions to the field elements directed attention to the provisions of paragraphs (J)(1) of 33 CFR Part 209.120 and (H) of 33 CFR Part 209.145. These instructions were dispatched on 26 June 1974. Deficiencies in public notices as expressed during the House hearings of May 1974 were highlighted. Instructions to field elements directed that public notices are to:

(a) Clearly cite the statutory authority involved (e.g., Section 404 FWPCA; Section 103, MPRSA; Section 10, Rivers and Harbors Act of 1899).

(b) For ocean disposal of dredged material, provide complete description of the composition of the materials to be dumped, to include statement classifying the material as being polluted or unpolluted in accordance with applicable EPA criteria (see 33 CFR Part 227.71, Federal regulations and criteria, Ocean Dumping, Federal Register of 15 Oct 73).

(c) Where applicable, provide complete description of the dredging, fill and disposal operations, including the site and the means of conveyance.

(d) Where applicable, indicate whether or not the disposal site is an approved EPA recommended site and if the designated site is a new or previously used dredged material disposal site.

(e) Where applicable, indicate on appropriate sketches the identification of the Baseline from which the territorial sea is measured, thus clearly delineating the applicability of FMPCA or MPRSA to the disposal operations and site.

Our review of public notices issued by the district offices would indicate that the Districts are adequately discharging their responsibilities. Guidance to the coastal districts is on a policy basis rather than a day-to-day review and direction basis. However, as problem areas are surfaced coordination and communication between the field element and OCE are initiated immediately in order to resolve issues. These procedures have been effective in handling the Corps Regulatory Program.

Question 2. As of May 1974 the Corps was not making a distinction, for the purpose of record keeping, between material dumped within the three mile limit and material dumped beyond. Section 102(a)(1) calls for the Administrator to utilize wherever feasible dump locations beyond the edge of the Continental Shelf. Section 103(b) calls for the Secretary to utilize sites selected pursuant to Section 102(a) wherever possible. (a) Because the section of the Act cited specifically calls for off-shelf dumping wherever feasible and implies a preference for dumping as far out on the Shelf as possible, could the Corps start keeping records of dredged material dumped within the three mile limit, within the twelve mile limit, and off the edge of the Continental Shelf? (b) Would the Corps have trouble implementing this type of record keeping immediately? (c) Is there any way the Corps could ascertain the locations and volumes of dredged materials already dumped and give the type of breakdown requested in question (a) above?

Response. Subsequent to the House hearings of May 74, the following data on Section 103 permit applications for FY 74 were compiled.

Permit applications	Sec. 10 and 103 (with discharge of dredged material from baseline to limits of territorial seas)	Sec. 10 and 103 (with discharge of dredged material beyond territorial seas)	Cumulative fiscal year total
(a) Applications pending (carryover from fiscal year 1973).....	1	51	52
(b) Applications received during fiscal year 1974.....	10	97	107
(c) Applications cancelled or withdrawn fiscal year 1974.....		2	2
(d) (1) Permits issued fiscal year 1974.....	9	49	58
(2) Letter of permission issued fiscal year 1974.....			
(e) Permits denied fiscal year 1974.....			
(f) Applications pending (end of fiscal year 1974).....	2	97	99

We have not compiled records beyond those above the FY 74 permitted actions. However, if the Committee desires greater breakdown or similar detail on Federal project disposal operations, we could do so by further query to each of our district offices. In view of the time and other administrative effort required to gather and compile such information, we would appreciate a sixty to ninety day response time if so requested.

Question 3. In the House oversight hearings of May, 1974, Mr. Quarles of EPA, stated that only two Corps permits had been reviewed under Section 103. Colonel Hughes stated that at that time, 74 Corps permits had been issued. (a) Has this discrepancy been explained? (b) Colonel Hughes suggested the problem might be one of record keeping. If so, have methods been implemented and communications been improved both interdepartmentally to avoid such discrepancies in the future?

Response. In checking with USEPA at the Washington level, the Corps was informed that the figure "only two" applied to the number of Section 103 permit applications involving materials that exceeded the ocean dumping criteria. A subsequent EPA submission for the House record indicated that EPA had reviewed approximately 100 permit applications involving disposal of dredged materials in ocean waters within the meaning of the Act. We are submitting to you a list of approved Section 103 permits for the period 1 October 1972 to 31 March 1974. This list obtained from our field offices would seem to verify the figure of 100 as subsequently provided by EPA. The detailed breakout as provided in this submission should clarify earlier testimony. Part I of the report lists Corps of Engineers authorized Federal projects, both new work and maintenance dredging, involving disposal of dredged material in ocean waters during the period 23 October 1972 to 31 March 1974. Part II of the report lists by permit number those activities permitted during the period 1 October 1972 to 31 March 1974. Part II lists approximately 100 permits. Such details as now provided on this one-time basis are not normally maintained at the Office of Chief of Engineers.

Decentralization of decision-making is most desirable. Limiting Fiscal Year detailed reporting requirements to that necessary for administering a program of the magnitude of 14,000 permit applications (Section 10, 404, & 103) assists in keeping costs to a minimum. Communications between the Corps and EPA are excellent. Discrepancies in statistics can exist because of misunderstanding of the questions asked and/or the time period addressed. The Corps difference between 76 and 100 permits, as submitted in this report, can be explained only by the fact that errors existed in compiling the statistics submitted by field agencies.

Question 4. What are the regulations and criteria concerning the construction of artificial islands? What we are looking for is some understanding of the controls that would prevent the Corps from avoiding EPA review of dredge disposal by creating an artificial island of dredge spoil. It seems that if the Corps dumped spoil to within a foot of the surface, EPA would have review responsibility, but if the Corps disposed of more material, enough to break the surface, EPA review authority under the Act would be circumvented.

Response. Regulations authorizing construction of artificial islands are contained in 33 CFR 209.120, Permits for Activities in Navigable Waters or Ocean Waters. Section 4(f) of The Outer Continental Shelf Lands Act of 1953 did extend the Corps' regulatory authority to the construction of artificial islands and fixed structures on the outer continental shelf beyond the Territorial Sea. There has been no attempt nor will there be any attempt to circumvent disposal operations under Section 103 of the "Ocean Dumping Act" from requirements of PL 92-532. If construction of an artificial island is the purpose of a disposal operation, notice and opportunity for hearings would be given to the public. If constructed by other than the Corps a permit application will be processed in accordance with Section 10 procedures. EPA coordination and review of such actions are required for a Federal action as well as for a requested permit action.

Question 5. Are PL 92-532 and 92-500 interrelated to the extent that criteria under one would affect criteria (and their implementation) under the other?

Answer. Yes Sir, in two predominant ways. Although the two environments (divided by the baseline) are different in some ways, there are many striking similarities. Efforts are being made to develop PL 92-500 criteria similar to those developed for PL 92-532. The Corps feels developing similar criteria (i.e., based on approximately the same theoretical basis) will (a) make both sets of criteria more meaningful and better able to predict what actually happens in the natural environment, (b) more practical to implement (i.e., implementable on a fairly routine basis, and (c) allow data and other knowledge obtained under one set of criteria to complement the other.

The two are interrelated in another way as well. Since each is applicable to a different geographical area the exclusion of disposal from one area often dictates that you must dispose in the other. It is felt that there is a general trend of thought (as reflected in the legislation) that disposal off the continental shelf is the most desirable of all "in water" alternatives. This is somewhat a matter of "out of sight, out of mind"; that is the deep ocean is the most remote environment we can use and the affects of such disposal cannot be measured and are therefore not significant. This may be the case, but there is no scientific basis for this position; just as there is no real basis for the generally held belief that "on land" disposal has less environmental consequence than "in water" disposal.

Question 6. How is bottom sediment classified in terms of pollution potential? To what extent has the Corps worked with the EPA in the development of regulatory criteria and appropriate testing procedures for implementation of PL 92-532?

Answer. The first attempts at analyzing sediment in order to determine its pollution potential involved a determination of the total amount of chemical contaminants present. Research results have now shown that there is no relationship between total sediment chemical concentrations and effects on water quality due to the dredging and disposal of these sediments.

Through the efforts of the Dredged Material Research Program (DMRP) conducted at our Waterways Experiment Station, and in conjunction with the EPA, the Standard Elutriate Test was developed as the criteria procedure for PL 92-532 and published in the 15 October 1973 Federal Register. The Standard Elutriate Test is a laboratory procedure in which sediment and water are mixed together and agitated to stimulate the dredging process and thereby allow prediction of water quality effects due to disposal operations. As a procedure, the Standard Elutriate Test has been shown to be a significant improvement over analysis of total sediment chemical concentrations and has the added advantage of being readily incorporated into a bioassay procedure to determine effects on aquatic organisms. It also provides a firm, scientific basis, for the continuing development of better predictive methods. Our future research efforts will be concentrated on the evaluation of the elutriate procedure in terms of the specific nature of the environmental effects it addresses. Also, the Standard Elutriate Test and various modifications will be rigorously investigated in connection with the extensive field studies being conducted under our Dredged Material Research Program.

Question 7. Has the Corps of Engineers, in conjunction with EPA and other agencies, attached a high priority to the development of more refined and sensitive bioassay procedures in determining if dredge spoil is "polluted" or "unpolluted", harmful or harmless?"

Response. Yes Sir, the Corps has given priority to reviewing, developing, and testing bioassay techniques as a means of determining the pollution potential and degree of harm resulting from the open water disposal of dredged material. A copy of the Second Annual Report of the DMRP is being furnished for the record in order to provide an insight on the scope of the total research program as well as how research in bioassay techniques is integrated into that program. EPA is fully aware of our progress in this area as a result of interagency briefings, prior notification of what we are planning to do, descriptions of work units involved, and by having the continuing opportunity of expressing opinions and exchanging information.

Bioassay techniques may prove to be one of the more effective tools for determining both acute and chronic effects of dredged material disposal on aquatic organisms. However, to date, methodologies and facilities to achieve this through meaningful results have proven ineffective, are only experimental, and are the subject of development research, most of which is being performed in the DMRP. Until this developmental research is completed and evaluated, the Corps cannot advocate the use of bioassay procedures as regulatory criteria.

Under the Aquatic Disposal Research Project of the DMRP there are two specific Research Tasks (1D), Effects of Dredging and Disposal on Aquatic Organisms, and (1E), Pollution Status of Dredged Material which are bioassay laboratory oriented. Nine research work units (within two Research Tasks) that are applicable to bioassay procedures are specified below:

Task 1E: Pollution Status of Dredged Material—To develop techniques for determining the pollutional properties of various dredged material types on a regional basis.

1E03 Development of Dredged Material Disposal Criteria.—Refinement of the Elutriate Test used in PL 92-532 and development of other bioassay-like procedures suitable for regulatory criteria.

1E04 Investigation of the Partitioning of Various Elements in Dredged Material. Environmental Effects Laboratory.—The manner and degree to which sediment-affiliated pollutants are available to influence water quality and aquatic organisms

1E06 Biological Assessment of the Standard Elutriate Test.—Laboratory techniques for evaluating the pollution potential of the soluble fraction of dredged material slurry.

Task 1D: Effects of Dredging and Disposal on Aquatic Organisms.—To determine on a regional basis the direct and indirect effects on aquatic organisms due to dredging and disposal operations.

1D01 Assessment of Aesthetic and Ecological Significance of Turbidity in Various Aquatic Environments.—Examination, via literature, of factors controlling spatial and temporal variation in turbidity and the roles played by turbidity in the environment.

1D02 Assessment of Equipment, Methodologies, and Institutional Capabilities Available for Conducting or Developing Bioassays.—Identification of static and continuous flow systems for studies of pure and mixed cultures of planktonic, nektonic, and benthic species.

1D07 Study of the Availability of Sediment-Absorbed Pesticides (DDT, Chlordane, Malathion) to Benthos with Particular Emphasis on Deposit-Feeding Infauna.—Uptake and accumulation of pesticides as a function of time by several species of freshwater and marine invertebrates.

1D08 Design and Establishment of Estuarine Ecosystem Simulations (Phase I).

1D09 Effects of the Physical Characteristics of Suspended Dredged Material on Benthos (Particle Concentration, Size Distribution and Shape): Comparison of Geographical Races.—Time-concentration mortality response of selected marine, estuarine, and freshwater organisms to suspended sediments.

1D10 Effects of Dredging and Dredged Material Disposal on Benthos and the Marine Environment.—Effects of temporal variations, seasonal changes, migration from boundaries, and life history characteristics on disposal site recolonization by benthos.

The results of all such research will be analyzed and verified in the field within the broader research Task 1A: Coastal Disposal Area Field Research (. . . to determine the magnitude and extent of effects of aquatic disposal on organisms and the quality of surrounding water, and the rate, diversity, and extent that such sites are recolonized by benthic flora and fauna. . . .)

It should be mentioned that the words "polluted" or "unpolluted" are absolute terms denoting a completely positive or negative situation. It is more realistic to recognize that dredged material (like everything else) contains greater or lesser amounts of contaminants. The effects of these contaminants are the important matter and should dictate all aspects of a dredging/disposal operation. The effects are not only a function of the contaminants present, but also include their form, their fellow contaminants, the type of dredging operation, the type of disposal operation, the environments of the respective dredging and disposal locations, and numerous other factors. Accurately defining these factors and their effects is the sole purpose of the Aquatic Disposal Research Project of the Dredged Material Research Program.

Question 8. What research is being conducted by the Corps' Dredged Material Research Program (DMRP) to find the effects of dredged material disposal on water quality and aquatic organisms? More specifically, what questions are being addressed by the research and what results do you have to date as pertains to implementing the requirements of PL 92-532?

Answer. Detailed information on various aspects of your question has been and is being furnished to the Committee. Of particular note are the reports "Literature Review on Research Study for the Development of Dredged Material Disposal Criteria" and "Discussion of Regulatory Criteria for Ocean Disposal of Dredged Materials: Elutriate Test Rationale and Implementation Guidelines." Also, the first DMRP monthly newsletter (May 1973) sets the basic picture of the program and the Second Annual Report (January 1975) offers a concise summary of the DMRP.

The DMRP is divided into four projects. One of these, the Aquatic Disposal Research Project is directed specifically toward determining the effects of dredged material disposal on water quality and aquatic organisms in both inland and oceanic waters. In general, this project is answering the following four questions:

(1) What is the short- and long-term fate of dredged material subsequent to disposal?

(2) What are the effects and the significance of the effects of dredged material disposal on water quality?

(3) What are the effects and the significance of the effects of dredged material disposal on aquatic organisms?

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(4) What constitutes the pollution status of dredged material? (What criteria and accompanying testing procedures are needed to predict in advance of dredging and disposal whether or not the dredged material will be "harmless" or "harmful"?)

To date (40 percent through with the DMRP) the approach used to provide answers to the various facets of these questions has involved a series of inter-related laboratory studies. Those studies initiated to date are outlined on pages 13-22 in the Second Annual Summary of the DMRP. The more pertinent of these studies are:

"Assessment of Aesthetic and Ecological Significance of Turbidity in Various Aquatic Environments"

"Assessment of Equipment, Methodologies, and Institutional Capabilities Available for Conducting or Developing Bioassays"

"Determination of Vertical Migration Ability of Benthos in Dredged Material Deposits"

"Study of the Availability of Sediment-Absorbed Pesticides to Benthos with Particular Emphasis on Deposit Feeding Infauna"

"Effects of Physical Characteristics of Suspended Dredged Material on Benthos"

"Effects of Dredging and Dredged Material Disposal on Benthos and the Marine Environment."

"Development of Dredged Material Disposal Criteria"

"Biological Assessment of the Standard Elutriate Test"

It is important to note that although we have learned a great deal (from laboratory studies), about the specific effects of dredged material disposal, particularly insofar as the development of regulatory criteria for PL's 92-532 and 92-500 is concerned, we will not have a complete picture until the results of these studies have been verified through extensive field studies. Results to date from these laboratory studies have indicated that detrimental effects on water quality due to disposal of dredged material are not as significant or as likely to occur as was suspected in the late 1960's and early 1970's. These investigations include effects due to the presence within the sediment of heavy metals, pesticides, and nutrients. Field studies have already been initiated at disposal sites located off the coasts of Oregon, Texas, New York and Ohio.

Question 9. In your opinion do the present criteria need to be modified in order to be more meaningful?

Response. Yes Sir. So far the data and the continuing, extensive research have shown that two modifications would make the present criteria more meaningful. Presently there is no provision in the criteria to take into account the fact that the material is diluted when it is disposed of in the ocean environment. A suitable dilution accounting is being worked out for PL 92-500 criteria and a similar procedure should be implemented for PL 92-532. Also, water from the dredging site should be used instead of water from the disposal site in the conduct of the Standard Elutriate Test. We feel that there will be a number of significant modifications in the future; however, to date the research has shown only the above two modifications as being desirable at this time. We must be careful to take only verified positive steps in the continuing campaign of improving these criteria. We have a good strong basis which incorporates the present state-of-the-art. However, we must be careful that we continue to modify the criteria only on the basis of scientific merit and not on the basis of unknown consequences.

Senator HOLLINGS. We have as our next witness, Mr. John T. Rhett, Deputy Assistant Administrator for Water Program Operations, Environmental Protection Agency.

STATEMENT OF JOHN T. RHETT, DEPUTY ASSISTANT ADMINISTRATOR FOR WATER PROGRAM OPERATIONS, ENVIRONMENTAL PROTECTION AGENCY; ACCOMPANIED BY KENNETH BIGLANE, DIRECTOR OF OIL AND SPECIAL MATERIALS CONTROL DIVISION; AND T. A. WASTLER, CHIEF OF THE MARINE PROTECTION BRANCH

Mr. RHETT. Mr. Chairman, it's a real pleasure for us to be here today. This is my first appearance before the subcommittee and I'd like to introduce the people who are with me.

Senator HOLLINGS. Very good, sir.

Mr. RHETT. On my right is Mr. Kenneth Biglane, who is the Director of the Oil and Special Materials Division; and on my right is Mr. Wastler, who is Chief of our Marine Protection Branch within the division.

The Marine Protection, Research, and Sanctuaries Act, commonly called the "Ocean Dumping Act," is a significant move toward providing protection for the marine environment.

It reflects public awareness of a need to assess and control the cumulative effects of man's activities on coastal and ocean resources, and the undesirable and possibly irretrievable changes to ocean ecosystems that these activities may have. In its first 2 years of regulatory authority over ocean dumping, EPA has taken a strict, highly restrictive approach toward applying the criteria embodied in the act by requiring all dumpers to actively seek alternatives to ocean dumping even when their wastes have met the published EPA criteria for issuing permits. During these 2 years we have brought all ocean dumping in the United States under full regulatory control and have required many dumpers to either stop dumping immediately or to phase out their dumping activities within the next few years.

I would like to briefly summarize for you our accomplishments over the past 2 years, point out some of the short- and long-range problems we see, and then describe what direction the ocean dumping permit program should take in the years to come.

Prior to passage of the Ocean Dumping Act, regulatory activities and authorities were scattered among different agencies and were not adequate to handle the problems of ocean dumping. States did not exercise control over ocean dumping and generally their authority extended only within the 3-mile territorial sea. The Army Corps of Engineers' authority to regulate ocean dumping was also largely confined to the territorial sea, but the corps dredging activities, in response to its responsibility to facilitate navigation, involved it with ocean disposal beyond the 3-mile limit. The Coast Guard enforced several Federal laws regarding pollution but did not have direct authority to regulate ocean dumping. The Atomic Energy Commission (now the Nuclear Regulatory Commission) licensed the disposal of radioactive materials.

In enacting the Ocean Dumping Act, the Congress vested the responsibility for regulating the dumping of all materials, except dredged material in the Environmental Protection Agency; regulating the ocean dumping of dredged material was assigned to the Corps of Engineers using criteria promulgated by EPA in consultation with the corps. Because protection of the marine environment was of immediate concern the act required that criteria be developed and the regulatory program implemented based on the then known impact of waste materials in the oceans. At that time, however, there was a great dearth of knowledge on the impact of wastes on the marine environment. This is being rectified as rapidly as possible at the same time the permit program is in operation, but EPA's efforts to meet its responsibilities under the act were undertaken with the realization that modifications of various aspects of our programs would be required in the future.

Senator HOLLINGS. What kind of research are you doing, Mr. Rhett?

Mr. RHETT. We are basically doing general marine research, Mr. Chairman, funded at just over a million dollars. The work is primarily concentrated in our labs.

Senator HOLLINGS. And what research are you conducting on dredged spoil?

Mr. RHETT. Nothing in particular on dredged soil. But we work in very close cooperation with the waterways experiment station of the corps. We participate in some programs with them and they brief us on their progress.

Senator HOLLINGS. And what do you think of their program?

Mr. RHETT. I think it's an outstanding program and I agree with General McIntyre, the funding of the program is most essential.

Senator HOLLINGS. What about the approach in the act that if you can't prove it isn't polluted, one must assume it is? In other words, you say the research is good. You've got a body of dredged spoil. You test it. You can't find any pollutants but you can't prove that it is unpolluted, so you assume it's polluted anyway. What's your comment on that type of procedure?

Mr. RHETT. If there are no pollutants in it, obviously it should not be treated as a polluted dredged spoil.

Senator HOLLINGS. But you heard General McIntyre just a moment ago attest to the fact that the EPA assumes all material, other than sand and gravel, to be polluted unless you can prove it's not.

Mr. RHETT. I think we start off basically—and I believe the corps does, too, when they look at the material—to determine whether it's polluted or not.

Senator HOLLINGS. Right, and then let's say you do look and it's not just sand and gravel; there are some foreign, extraneous elements included. You test it and you've got the research and you say the Corps' research is good, excellent, and they do their very best to show that it's not polluted, but they haven't been able to conclusively prove any pollutants are present but you can't prove that there aren't. You just assume it. I'm just trying to reconcile that in the procedure.

Mr. RHETT. In general, if a material is suspect—I said suspect—then we feel the burden of proof should be on the people who are seeking disposal.

Senator HOLLINGS. I'm back to my original question. You assume all, other than sand and gravel, are suspect.

Mr. RHETT. Yes; but let me explain that, Mr. Chairman. In other words, the people who are proposing to dump any material need to come to us initially and establish that it's not polluted—and I believe that's the intent of the act—rather than our giving a blanket approval unless we are informed something is polluted.

Senator HOLLINGS. All right. Go right ahead.

Mr. RHETT. One other item on research, if I may, sir. Of course, for the bulk of the research we depend very strongly on NOAA, whose program of research I think is a good effort. The bulk of our own research is general marine research quite a bit of which is applicable to the ocean dumping program.

Title I of the act establishes a system of permits to be administered by the EPA and the Corps of Engineers to control dumping in ocean waters. Both the transportation of material to be dumped and the dumping itself are controlled.

The act prohibits the transportation from the United States for dumping in ocean waters and the dumping into the territorial sea or contiguous zone, of any radiological, chemical or biological warfare agent, or high-level radioactive wastes.

The same activities with regard to other materials, except dredged material, are to be regulated by permits issued by the Administrator. He may issue permits where he has determined that the dumping will not "unreasonably degrade or endanger" human health, amenities, or the marine environment. In establishing criteria for assessing permit applications, he must consider: The need for the dumping; its effects on health and welfare, shorelines and beaches, and the marine ecosystem and its resources; the persistence and permanence of the effects; appropriate locations and methods of disposal; and effects on alternate uses of the oceans. With this guidance, the authority to issue or deny special and interim permits, set permit conditions and modify or revoke them, has been delegated to the 10 EPA Regional Administrators. Authority to issue or deny emergency permits, general permits, and research permits, and the authority to designate dumping sites, has been retained by the Administrator.

Our initial approach under this permit program was to establish interim regulations and criteria for the issuance or denial of permits on a general basis and then promulgate final regulations and criteria as rapidly as circumstances permitted. They were based on initial operating experience with the program and on public comment on the interim regulations. The criteria established the basis upon which permits are issued or denied. These include quantitative criteria concerning allowable concentrations on certain material and analytical tests from which the probable impact of the waste materials on the environment may be determined.

As part of the publication of initial regulations and criteria the dumping sites then in use for ocean dumping were approved on an interim basis. These designations will continue until each site has been adequately surveyed and a determination made as to whether its use should be allowed or terminated. Environmentally acceptable sites for disposal will be announced in the Federal Register, and will be supported by environmental impact statements.

Senator HOLLINGS. When will that occur, Mr. Rhett?

Mr. RHETT. We are in the process of this right now. There are four sites that are presently having baseline surveys conducted on them—two out of New York and two out of Philadelphia.

Senator HOLLINGS. When do you expect to make the designation?

Mr. RHETT. We plan to make the designation on the New York sludge site in 1976. A final designation is scheduled on this site 106 miles off New York in 1978, on the Philadelphia sludge site in 1978, and the site off Galveston in 1977. These four have top priority.

Now if I may divert a bit here, the existing 11 sites are being used, until such time as all the work for the baselines can be finished. In other words, we did not stop dumping within these sites while this work was going on. We are phasing it in.

I would like to submit as part of my statement a table summarizing ocean dumping activities during 1973 and 1974. This table shows a net increase in ocean dumping of about 2.1 million tons from 1973 to 1974. This net increase is the result of increases in dumping of sewage sludge and construction and demolition debris of about 1.1 million tons each combined with a slight overall decrease in dumping of industrial wastes over the same period.

[The table follows:]

OCEAN DISPOSAL; TYPES AND AMOUNTS, 1974¹ AND 1973²

Waste type	Atlantic		Gulf		Pacific		Total	
	1974	1973	1974	1973	1974	1973	1974	1973
Industrial waste.....	4,344,000	3,997,100	950,000	1,408,000	0	0	5,294,000	5,405,100
Sewage sludge.....	6,542,000	5,429,400	0	0	0	0	6,542,000	5,429,400
Construction and demolition debris.....	2,290,000	1,161,000	0	0	0	0	2,290,000	1,161,000
Solid waste.....	0	0	0	0	200	240	200	240
Explosives.....	0	0	0	0	0	0	0	0
Total.....	13,176,000	10,587,500	950,000	1,408,000	200	240	14,126,200	11,995,740

¹ 1974 source—EPA regional offices, unpublished reports, 1974 (12 mos of dumping activity).

² 1973 source—EPA regional offices, unpublished reports, 1973 (8 mos of dumping activity—May to December 1973 under permits issued by ocean disposal program extrapolated for 12 mos to provide an annual rate).

Mr. RHETT. I might add that all ocean dumping of construction debris is in New York. The increase of these materials is due to construction of the Harlem Tunnel to transport water into the city.

During the coming year, we expect to phase out many industrial dumpers as alternate methods of disposal are developed and implemented. Based on existing permits and permit applications, there should be no dumping in the Pacific Ocean and dumping in the Gulf of Mexico should be about 10 percent of the 1973 level.

All dumping of municipal sewage sludge originates in the New York and Philadelphia metropolitan areas. The total volume of these municipal sewage sludges is almost equal to the volume of all other materials dumped, and the volume dumped increased between 1973 and 1974.

Senator HOLLINGS. Let me interrupt, if you don't mind. Let's talk just one second. We all are pressed for time this morning, but New York and Philadelphia—now go right on down—Baltimore, for example, does not use the ocean.

Mr. RHETT. That is correct, sir.

Senator HOLLINGS. Well, now, if Baltimore can handle its wastes, why can't Philadelphia?

Mr. RHETT. Sir, we have an adjudicatory hearing that started yesterday on this subject. The problem is to find in each instance the most environmentally, socially, and economically acceptable solution.

Senator HOLLINGS. Why don't you start with the same type of approach you take on whether materials should be dumped? Why don't you just assume the worst place is the ocean to begin with and let them prove which is the better or most desirable, if you want to characterize that way? Why do we just continue on allowing Philadelphia to dump? How long will Philadelphia be dumping in the ocean?

Mr. RHETT. Of course, the hearing will determine that. This started

when we told Philadelphia to phase out 50 percent of their sewage sludge going into the ocean by 1979 and the rest of it out by 1981. We have told the city of Philadelphia that they have to phase ocean dumping out, not under the Ocean Dumping Act but under the Administrator's normal authority procedure. This was appealed by the city of Philadelphia. An adjudicatory hearing has been set up and is currently in process right now to hear Philadelphia's side of the story.

Senator HOLLINGS. Is the schedule that you testified to realistic with respect to mayoralty terms? If I'm the mayor of Philadelphia and my term expires in 2 or 3 years and you get to 1981, you might find yourselves like Mayor Beame of New York, all the other mayors left him with the bag. I don't have to do anything and the other mayor will, instead of having supposedly 7 years, will now have to do it in 2 years. That's the kind of question I've got in my mind. Can't you start minimizing dumping annually to get some response rather than just appeals so they begin moving in that direction to some degree?

Mr. RHETT. Mr. Chairman, there are really two parts to your question. One part concerns the mayor and the elected officials. But, Carmen Guarino who is the Commissioner of the Philadelphia Water Department is a permanent employee and has a very personal stake in the permit decisions. So I don't think the business of officials changing will affect the decision. I know EPA would not want this to happen.

As to the second part of phasing out, the difficulty is to find alternate methods of disposing of the sludge, and this takes time. It requires construction of alternative facilities. As an example, if you want to incinerate it, you have to build an incinerator. If you want to transport it and spread it on land, you have to buy the land; you have to buy the transport equipment, et cetera.

This is the reason why we felt the amount of time that was given was reasonable and considers the requirements of finding an alternate site for the sludge rather than just letting it pile up.

I believe that unless we find out differently, our approach is correct; that is the reason why Administrator Train is holding the hearing.

Senator HOLLINGS. All right, sir.

Mr. RHETT. Eleven ocean dumping sites in the Atlantic Ocean and the Gulf of Mexico are now in active use for municipal and industrial wastes. There is no dumping of these wastes in the Pacific, although municipal sewage sludge is discharged to the ocean through outfalls. That is really in the Los Angeles area and will be ultimately phased out. These are regulated under the NPDES permit system. Ocean dumping site surveys are being conducted on three sites, and additional surveys are due to begin this year. These surveys are designated to provide the scientific data for environmental impact statements to be prepared for each dumping site designated on other than an interim basis and to determine as the basis for dumpsite management the effects of disposal in the oceans of a variety of wastes. Regulations for the designation and management of ocean dumping sites are being developed and will include the requirements for baselines and trend assessment surveys, and an interagency agreement concerning cooperative efforts in such surveys has been developed with NOAA. A detailed baseline survey is currently being conducted in the New York Bight for an alternate site for sewage sludge disposal.

EPA is also studying and evaluating two dump sites, one industrial and one municipal, off Delaware Bay, and is cooperating with NOAA in studies of one site off the Continental Shelf. The Corps of Engineers has underway a 5-year dredged material research program which will provide EPA with the baseline data necessary to evaluate dredged material disposal sites.

These studies are being supplemented by EPA research activities including conducting investigations into ecological processes and effects of ocean dumping.

One principal activity in the New York Bight region is designed to study the movement of sludge particles dumped from barges. Two mathematical models have been developed for this last purpose; one is a barge discharge dispersion model that predicts the movement of particulates through the water column, and the other is a circulation model for the New York Bight that can be used to predict pollutant concentration over time. Other efforts are experiments designed to assess and measure contaminants (heavy metals, PCB's and hard pesticides) leaching from spoils and sludges under simulated field conditions, using appropriate analytical and bioassay techniques. Along with simulation and mathematical model studies, a field study is being performed with the object of coordinating and integrating laboratory studies with field measurements.

An interim analytical methods' manual for the analysis of wastes and marine environmental samples has been completed. This manual is being used by EPA coastal regions in the operation of the ocean disposal permit program while further research is being carried out to develop and certify analytical methods specific to ocean dumping problems.

Surveillance of dumping activities is assigned by the act to the Coast Guard. The Coast Guard's enforcement program is keyed to close surveillance of the disposal of toxic materials with spot checks of nontoxic material dumps.

All violations of permit conditions and illegal dumping reported to EPA are subject to enforcement action through the assessment of civil penalties and, where necessary, criminal proceedings. From April 1973 to December 1974, there were 983 ocean disposal surveillance missions undertaken by the Coast Guard; 36 apparent violations were referred to EPA. These were all investigated. Letters of warnings were issued and formal enforcement actions were taken.

Enforcement actions were initiated in the EPA regions I, II, and IX for the assessment of civil penalties as provided for by section 105(a) of the act. The violations ranged from a failure to submit a plan for the segregation of industrial and municipal wastes and the dumping of material without a permit to short dumping—failure to dispose of material in the designated dump site, and failure to properly containerize waste. Fines totaling \$65,000 were assessed. One is currently being appealed.

Continuing interagency coordination is being achieved by an interagency committee composed of EPA, NOAA, the Coast Guard, and the Corps of Engineers. This committee's purpose is to provide overall program coordination. Formal meetings are held only infrequently, but considerable interchange of information is conducted on an ongoing basis. I might again digress here to say that I think the

cooperation among the Federal agencies is outstanding. It's very, very close.

After 2 years of regulating ocean dumping under the Marine Protection, Research, and Sanctuaries Act, we in EPA feel that we can point to some real accomplishments in reducing the amounts of industrial waste being dumped into the ocean, in forcing all dumpers to seek other alternatives to ocean dumping, and in developing new information on the impact of wastes on the ocean. At the same time, however, we have seen a major problem emerge which may have far-reaching effects not only on the ocean dumping permit program, but also in our entire environmental protection effort.

This problem is, quite simply, how to dispose of sewage sludge. As more and more municipalities upgrade their sewage treatment facilities from no treatment to primary, secondary, or advanced waste treatment processes, more and more sewage sludge is generated. The greater degrees of treatment produce greater quantities of sludge, and the sludge from more advanced sewage treatment processes tends to contain larger quantities of trace metals and persistent organic compounds, which may have adverse environmental consequences whether they are incinerated, put on the land, or dumped in the ocean.

EPA regards its responsibilities as covering the entire environment. We feel that we must seek out and require the use of the most acceptable environmental alternative for the disposal of waste residues for which additional treatment is not feasible or will not yield significant environmental benefits.

Senator HOLLINGS. Mr. Rhett, with the problem of sludge, you only have New York and Philadelphia.

Mr. RHETT. Yes, as of today. But we must look to the future.

Senator HOLLINGS. Nobody else is going to start it under your regulations, are they?

Mr. RHETT. No, but there will be great pressures, we believe, as we start to move into advanced waste treatment, to find acceptable environmental solutions to the disposal of sludge. This will mean that each of the coastal cities that has a high population and little land will be looking for other methods of disposal.

Senator HOLLINGS. Little land and, just to complete that thought, no ocean. That's right. Go ahead.

Mr. RHETT. They will be looking in the area of ocean disposal. I think it is important for the EPA to look at this sludge, to look at all solutions of how to get rid of it, and to choose the most environmentally acceptable means.

Senator HOLLINGS. If you had to make that choice from your vantage point, would you ever choose the ocean over a land site? I mean, I have been listening to this testimony about all the progress in phasing dumping out, and we're starting here and there, and now you act like you're going to start up something that never was.

Mr. RHETT. No. Well, that was not the intent.

Senator HOLLINGS. Then answer the last question. Do you think the ocean is a better place to dump sludge than on land?

Mr. RHETT. I think, personally, there may be, under some circumstances, situations where that could be the case. You have to look carefully at it. It's very site specific and very sludge specific.

Senator HOLLINGS. Sludge specific? Elaborate on that. Where would the oceans be the better place?

Mr. RHETT. Let's say you have no heavy metal contaminants or anything of this nature and no land available for disposal. I'm not sure. Maybe it is better to burn it and pollute the air, but I think that we should evaluate all methods. I am not saying that it should go in the ocean, but, I am saying that I think all methods of disposal should be considered.

Senator HOLLINGS. We looked at all methods of disposal and we looked at oceans. It's bound to spread on the ocean. That's where all life begins, not on land but in the sea. We made that determination. We are not looking around to find places to dump—we are trying to close down Philadelphia and New York and all the others, as you say, and even the drains coming out of Los Angeles. I'm with you. Mentally, I'm with you. Congress is going down the road with you. But you say there's a terrible thing about sewage sludge, intimating you're going to start allowing that. Suppose your studies state that. Are you going to start putting sludge in the ocean? Is that your contention?

Mr. RHETT. It might be the most environmentally acceptable.

Senator HOLLINGS. Under what circumstances could you find that? What are the circumstances that would warrant that?

Mr. RHETT. As an example, if we have sludge with a high concentration of trace contaminants and we spread it on the land, we might contaminate the land so it could not be used for agricultural or other purposes or contaminate possible water supply sources. If it has a high mercury concentration and we were to burn it; we could violate the Clean Air Act.

With regard to ocean dumping the act says to regulate very closely and to look at sites off the continental shelf. I'm not sure 5 years from now how all this will come out.

Right now our policy is to phase out the ocean dumping of sludge in both the Philadelphia and New York areas.

Senator HOLLINGS. You guys had better stay in that one direction because we'll amend the law to make sure you do.

Mr. RHETT. I think we are, but I do not believe that the act, as such, precludes ocean dumping. It says "regulate."

Senator HOLLINGS. Well, we'll look at that and make sure because we want to go in one direction on this one. We're trying to clean up the oceans. Go right ahead.

Mr. RHETT. Senator, I want to assure you that is the direction in which we are going. That is the reason why we are in the present controversy with Philadelphia. That is also the reason we are in the controversy in New York where we are considering moving the dumpsite further out and we are asking New York to find alternatives. In fact, there is a major alternative study being conducted in New York that, I believe is due in late summer or early fall on alternative methods of disposing of their sludge without ocean dumping.

Senator HOLLINGS. I will just read from the act in the first paragraph. On that first page, "The Congress declares it is the policy of the United States to regulate the dumping of all types of materials in the ocean waters," as you have just attested," and to prevent or strictly limit the dumping of materials in the ocean."

Mr. RHETT. Yes, sir.

Senator HOLLINGS. That's the direction we're going in and we can define it even further if it's necessary. Go right ahead.

Mr. RHETT. Senator, I assure you that is the direction EPA is going and all of our actions are in that line.

We feel that the ocean disposal of sewage sludge, whether by dumping or by outfall, can be permitted only on an interim basis until it is conclusively demonstrated that ocean disposal of sewage sludge is the most acceptable environmental alternative available for ultimate disposal within the limitations of available technology.

Also, during the past 2 years significant new information has been developed on techniques for conducting bioassays and on acute and chronic toxicity levels of some trace contaminants in marine waters. In addition, we have had the benefit of penetrating comments on our program from the National Wildlife Federation as well as from many interested citizens.

The National Academy of Sciences convened a workshop of marine scientists to make recommendations for improvement of the program, and we expect their report within a few months. As a result of all of these inputs we are preparing revisions to our regulations and criteria to reflect advances in knowledge. These revisions will set the direction the program will take for the future and we intend to have thorough technical and public review before they are promulgated as final regulations.

In the future, we will continue to rely heavily on three ongoing program components: (1) the knowledge of present environmental conditions and continuing trends gained from baseline surveys, (2) the research program on the identification of specific effects of certain pollutants in the marine environment, and (3) the continuing development of methods of sampling and laboratory analysis specific to the marine environment.

The baseline surveys will identify the normal biota and food chain mechanisms in prospective dumping site areas and allow investigations of the effects of wastes to be dumped on species normal to the area. The surveys will also allow better determination of movement and ultimate fate of wastes dumped. A program of continuing baseline surveys has already begun, and will ultimately result in a continuing monitoring program of all sites in use.

Further development of sampling and laboratory analysis techniques is probably the most immediate need in determination of the effects of ocean dumping. Many pollutant-related methodologies are borrowed from freshwater techniques which may or may not be directly applicable to wastes mixed with waters naturally containing high concentrations of dissolved salts, metals, and other materials. Although a number of techniques presently in use allow for analytical interference by such substances, many others must be adapted or completely changed to be useful.

We believe that continued strengthening of the scientific and technical capabilities of the program is essential at this time. Clearly, as the program progresses, the accumulated data and analyses must be assimilated and reflected in the program.

The past year has seen the first use in the United States of a technique in ocean disposal commonly used in Europe for the past few

years. This is ocean incineration, and it is useful for the disposal of toxic wastes with a high heat energy content. Last October a specially designed incinerator ship capable of burning 4,200 tons of chemical wastes per mission, incinerated organic chloride wastes with greater than 99.9 percent efficiency at a site 135 miles south of Galveston, Tex. These wastes are highly toxic and could not be dumped directly into the marine environment. Incineration converted these wastes to hydrogen chloride and carbon dioxide in quantities innocuous to the oceans and the atmosphere.

This first ocean incineration in the United States was authorized initially under research permits for two shiploads of waste. EPA and the Shell Chemical Co. cooperated in conducting thorough tests of burning efficiency, plume dispersal in the atmosphere, and effect on the marine environment. EPA provided scientific personnel for marine and aerial monitoring and ran tests to determine the effects on the environment. The marine monitoring utilized a NOAA research vessel with an EPA scientific party. The Coast Guard and NASA Goddard personnel also provided valuable aid in this monitoring effort. After two research burns EPA felt that enough information had been accumulated on the conditions of the incineration to allow disposal of the remainder of this particular waste under an interim permit. A full technical report of this operation is being prepared and will help us in evaluating the viability of ocean incineration of chemical wastes as an alternative to dumping.

While we were extremely pleased with the first effort at ocean incineration in the United States, we do not yet feel we know enough about the process and its impact under different environmental conditions to permit its general use at the present time. Our intent, therefore, is to issue permits for ocean incineration as research permits until enough information has been developed to promulgate standard criteria for ocean incineration.

At the present time, the U.S. Air Force has applied for an ocean incineration permit for the disposal of 2.3 million gallons of herbicide orange in the Pacific Ocean. Public hearings were held on this permit application in Honolulu on April 25 and in San Francisco on April 28. At these hearings the Air Force presented extensive testimony indicating that the proposed ocean incineration would do no harm to the marine environment or cause any effects in the air. They also indicated an intent to investigate a reprocessing proposal by conducting a pilot plant study on a small amount of the herbicide orange to see whether the claims made by the reprocessing firm were valid. They requested a reconvening of the hearing at a later date in Washington after the results of the pilot plant study were completed, which they anticipated would be within 90 days or so.

The Marine Protection, Research, and Sanctuaries Act provides that in designating dump sites the EPA utilize, where feasible, locations beyond the edge of the Outer Continental Shelf. Scientific doubt has been expressed as to the advisability of deep water dumping as a feasible alternative either environmentally or economically. A cooperative survey with NOAA has been conducted on one off-the-shelf site and other sites will be studied as rapidly as resources permit, to determine whether or not additional environmental benefits are derived by using off-the-shelf sites as opposed to sites nearer shore.

Ironically, the major problem in the future is anticipated to be increased pressure to dispose of wastes in the ocean which result from more and better waste treatment facilities removing increased amounts of wastes from both municipal and industrial waste streams. As I mentioned earlier, our basic approach has been to find and use the least environmentally damaging site and method of each waste whether it involves land, air, or water.

In summary, Mr. Chairman, since enactment of the Marine Protection, Research, and Sanctuaries Act the option of uncontrolled dumping is no longer available. Materials which were once discarded to the detriment of the oceans are now being reclaimed for new beneficial uses. As resources are conserved and reclaimed so, too, are the oceans protected. Much more is needed to be done to increase our understanding of the marine environment in terms of long and short-range research, measurements, observations and experiments. We must, therefore, continue to weigh carefully the impacts man's activities will have on the oceans against the limits of our own information.

Our organization, technical assistance, research and monitoring, and interagency cooperation will, I believe, go a long way toward shaping the program which, I am sure we all want. I will now be happy to respond to any questions the committee may have.

Senator HOLLINGS. Well, we thank you very much, Mr. Rhett. I just emphasize the matter of limiting all municipalities and all dumping of sludge into the ocean.

Mr. RHETT. Yes, sir.

Senator HOLLINGS. The trouble this Government has is going in several different directions.

Now if you're going to come in and start cleaning up the oceans, which is the intent of the Ocean Dumping Act, and give time until 1979 to Philadelphia and have them out looking for land to try to place that sludge on, let them conform like all the other municipalities of America are conforming, and that's fine business. But if you're going to say we waiting for a research thing here and we might find it might be nice to dump them in the oceans, then you're going in two different directions. You're trying to build up the Philadelphia case. You've either got to set up a rule and make the EPA case that this particular law makes it public policy for the people of this country or else you've got to turn around and go in the other direction. We'll make sure that law does not give that discretion on ocean dumping so you're bound to go into a different direction. We don't mind your experimenting. You can experiment and research all you want and then come back and change the law, but not hold out on a matter of public policy and say that's the policy now but we might change it later. That's the trouble with Washington. They don't know the policy on natural gas. They don't know the policy on water.

They don't know the policy on foreign commitments. And now we come up with this one and we thought we had a pretty clear law, and now you tell me it's a good law and you're beginning to enforce it and you've got Philadelphia and New York and all the other cities moving in this direction in this country but we've got a little research and we might change it around.

Mr. RHETT. Mr. Chairman, I would like to emphasize that in both New York and Philadelphia, our intent is loud and clear on phasing out ocean dumping of sewage sludge. As an example, in Philadelphia before that permit was issued, our region determined that they should phase out ocean dumping. We think that it's the most environmentally acceptable thing to do.

I do not want to leave the impression that we are not moving in that direction, because we are.

Senator HOLLINGS. And I don't want you to leave that impression.

We thank you and your associates very much.

Mr. RHETT. Thank you.

[The questions and answers referred to follow:]

FEBRUARY 12, 1975.

HON. RUSSELL E. TRAIN,
Administrator, Environmental Protection Agency,
Washington, D.C.

DEAR MR. TRAIN: The Senate Commerce Committee is currently preparing for oversight hearings on the Marine Protection, Research and Sanctuaries Act of 1972 (Ocean Dumping Act).

Enclosed are a number of questions and requests for specific materials which relate to your Agency's responsibilities under the Ocean Dumping Law. We would appreciate your cooperation in expediting a response to us so that we may be fully prepared for comprehensive oversight hearings.

We have a target date of early March of these hearings to begin. If you need additional explanation of our needs, please contact James P. Walsh, Staff Counsel for the Committee at 224-9347.

Sincerely,

WARREN G. MAGNUSON, *Chairman.*

Enclosure.

**MATERIALS REQUESTED AND QUESTIONS CONCERNING PUBLIC LAW 92-532,
THE MARINE PROTECTION, RESEARCH AND SANCTUARIES ACT OF 1972**

I. MATERIALS REQUESTED

- (1) A copy of all annual reports to Congress pursuant to Title I, Section 112.
- (2) All materials available on appropriations, outlays and budgeting matters concerning EPA's administration of the Act, including financial breakdowns for both fiscal 1973-1974 and 1974-1975.
- (3) A list of permit applications received by EPA with a breakdown of EPA's response and the type of permit issued.
- (4) A list describing, or preferably a map locating, all selected dump sites, including those which may have been phased out and those which may have been selected but have not yet been employed.
- (5) Any tables, charts or figures available on the quantities, concentrations and make-up of materials dumped or scheduled to be dumped under the permit program. We prefer a site by site breakdown or at least an EPA Region breakdown. We are particularly interested in these figures on a comparative basis with each of the last three years.
- (6) Any information on enforcement activities or evidentiary material assembled by the Coast Guard and forwarded to the Administrator as provided for in Section 107(e).

Questions

(1) Title II, Section 201 calls for the "Secretary of Commerce, in coordination with . . . the Administrator shall . . . initiate a comprehensive and continuing program of monitoring and research regarding the effects of dumping . . ." and report annually to the Congress.

(a) What has been accomplished or determined by the program? (b) What financial data is available concerning outlays on ocean dumping research and monitoring?

(2) Title I, Section 106 (d) allows States to propose to the Administrator criteria relating to the dumping of materials into ocean waters within its jurisdiction. The Administrator may, in turn, determine those criteria to be not inconsistent with the purposes of the title and may adopt those criteria and may issue regulations to implement such criteria. (a) Have any States proposed such criteria? (b) What have been the Administrator's determinations concerning States proposals? (c) In instances where State criteria have been determined not inconsistent with the purposes of the title, have regulations been updated to implement the criteria? The Florida Department of Pollution Control publicly disagreed with EPA's criteria for bioassay data concerning DuPont's dumping in the Gulf of Mexico. (d) How were the FDPC criteria found *inconsistent with the purposes* of the title? (e) In what manner was this disagreement resolved procedurally?

(3) Title I, Section 103(c) grants the Administrator final say over the Secretary of the Army on the issuance of permits for the dumping of dredged materials. (a) Has the Secretary of the Army in all cases notified the Administrator of his intention to issue a permit prior to his actual issuance of the permit? (b) If the Secretary was to issue a permit without prior notification of the Administrator, how would the EPA and/or the Coast Guard know an invalid permit had been issued? (c) Has the Administrator disagreed with the Secretary in any cases concerning the issuance of COE permits? With what results? (d) Has the EPA granted any waivers from the specific permit requirements, as allowed for in Section 103(d)? (e) What is EPA's response to the charge that in creating *specialized criteria* for the evaluation of dredged material it has failed to meet the directive of Section 103 (b) which calls for COE's initial permit determinations to be based on the *same criteria* established to control the dumping of other waste materials?

(4) There was a great deal of public and private protest concerning the issuance of a DuPont dumping permit in the Gulf of Mexico in July and August, 1974. We are aware that DuPont was eventually refused a permit by the Administrator, revoking Region VI Administrator Arthur Busch's previous permit and amended permits. (a) With the existence of written regulations (38 Fed. Reg. 28610, *et seq.*, October 15, 1973) what is EPA's explanation for the contrary determinations on permit applications between the Administrator and the Region VI Administrator? Louisiana officials charged that the site used for dumping by DuPont was moved from a location off Texas to one off Louisiana without notice or public hearings. Florida officials make the same charge when the dump site was moved south of Pensacola. Section 102(a) calls for the Administrator to give "notice and opportunity for public hearings" and "in reviewing applications for permits . . . to make such provision with interested Federal and State agencies as he deems useful or necessary." (b) How was notification made prior to the issuance of the permit and the selection of the dump sites? (c) Does EPA determine dump sites prior to the issuance of permits, or does EPA select sites individually for each dumping permit granted? (d) Does EPA feel that notification is required under the title in respect to the issuance of permits but not in respect to dump site selection? (e) What steps have been taken to more adequately notify interested parties so that they may participate in public hearings concerning sites and permits? (f) Dump sites were moved a number of times in the Gulf. Were these moves a function of EPA's responsiveness to public protest or to new data brought to light in hearings generated by the public protest? In the latter, what does this say for the thoroughness of EPA's data accumulation prior to the initial site selection?

(5) EPA conducted samplings in the New York Bight to determine if the sludge line or "black mayonnaise" on the ocean bottom was moving toward the shore. Dr. William H. Harris, a marine geologist at Brooklyn College, concluded that the sludge bed was moving, where EPA concluded it wasn't. Further, Dr. Harris claims to have determined that the sludge was located intermittently from 2.7 to 3.7 nautical miles from shore while EPA determined it much farther out. (a) Have these conflicting findings been resolved? (b) Dr. Harris also maintains he developed a sampling procedure that other scientists don't use involving the use of heavy metal ratios found in sludge to "fingerprint" movements. Has this procedure been verified as accurate? (c) If so, has EPA adopted the procedure? (d) What is the most recent determination concerning the location and movement of sludge beds off the beaches of Long Island? (e) Has this determination moved up the previous timetable to end ocean dumping in its present location in the Bight

by 1976? (f) Dr. Harris initially explained the disparate findings as indicating no real discrepancy but on the failure of EPA to take adequate bottom samples. If so, was the problem in methodology or finance?

(6) In determining whether or not to issue an interim permit, economic feasibility sanctions seems to outweigh the potential or actual damage to marine ecosystems. (a) What does EPA see as the distinction between economic feasibility and economic expediency as it relates to the criteria for issuing permits? (b) Section 2274, Phase B (a) of the final regulations requires those with interim permits to apply by July 1, 1977, the best technology available to remove those materials which do not meet the provisions of Section 2273. Unless very large amounts of waste were to be dumped under those permits, why wouldn't temporary land storage be economically feasible until treatment must be applied in July, 1977? (c) If volumes of waste to be dumped are so great that temporary storage would not be economically feasible, it can be concluded that this represents a very great volume of unacceptable toxic waste which is being dumped in the ocean. What is EPA's response to this? (d) What is the feasibility of restricting disposal sites to locations off the edge of the Continental Shelf?

(7)(a) Why is no implementation plan required of applicants seeking and receiving special permits? (b) Section 221, 1 (j) of the final regulations requires applicants to explain why available alternative means of disposal are thought to be inappropriate. Why doesn't this subsection require at least some responsibility on the part of applicants to take an active role in *developing* alternative means of disposal?

(8)(a) Has EPA formalized any approved marine bioassay procedures? (b) What priority does EPA place on the development of final, effective and specific bioassay procedures? (c) How is this priority reflected in Rand D expenditures?

(9) The National Wildlife Federation charges that in at least two respects EPA's ocean dumping criteria fail to match the level of control required by the International Ocean Dumping Convention. Specifically, Article IV of the Convention places a total ban on the dumping of so-called "black list" materials, subject to the very narrowest of exceptions, yet EPA's construction of permitted "trace contaminant" levels has significantly eroded his prohibition. Also, NWF has charged that EPA criteria contain no safeguard comparable to Annex I of the Convention, which requires "black list" materials to be subject at minimum to the standards governing "gray list" materials, even if present as trace containments. What is EPA's response?

(10)(a) How satisfied is EPA with the degree of cooperation and coordination achieved with other agencies involved in the administration of this Act, to wit: COE, USCG, and NOAA through the Department of Commerce? (b) What legislative or fiscal changes does EPA feel would be useful to better realize the purposes of MPRSA?

(11)(a) How extensive is EPA's ongoing monitoring program of dump sites and the effect of dumping on the marine environment? (b) How does the monitoring and surveillance program work? (For example, once EPA issues a permit, how can the Coast Guard and/or EPA be certain that the volume, concentration and toxicity of what is *dumped* is the same as what is *authorized* to be dumped by the permit?) (c) Do the Coast Guard patrols have the scientific and fiscal capacities for collecting and determining the chemical make-up of what is dumped?

ADDENDUM

(1) EPA and other agencies are actively participating in the development and implementation of a national marine monitoring plan through the Interagency Committee on Marine Environmental Prediction. Is EPA's participation in this program funded through appropriations authorized under MPRSA? If so, what has been accomplished under this plan to date and what results are expected?

(2) As of May 22, 1974, there had been only seven cases in which EPA had initiated some form of enforcement proceeding, and all were in the processing stages. What were the outcomes of those proceedings and what other enforcement proceedings have since been initiated?

(3) In the Ocean Dumping Oversight Hearings before the House last May, Congressman DuPont of Delaware presented a list of permittees whose wastes were claimed to be economically feasible to treat by a number of waste disposal firms. Has EPA investigated the claims of these disposal companies? With what result? If the claims have been substantiated, what measures has EPA initiated to more effectively evaluate permit applications, particularly in regard to determining alternate means of disposal?

(4) In 1973, 240 tons of solid waste were dumped off of California under an interim permit pending the dumper's completion of a land based incinerator. Is the incinerator in operation? Has solid waste disposal in California been completely phased out? Have EPA and the Coast Guard resolved the issue of whether or not the dumping of galley waste comes under the auspices of the permit program?

(5) How would EPA handle a situation where the cessation of ocean dumping of sewage sludge would lead to an increase of sludge disposal through outfalls? Is it possible for EPA to be put in a position where it must make a trade-off between its' responsibilities under MPRSA and under FWPCA?

(6) It is understood that as of May, 1974, EPA had reviewed only two Corps of Engineers permits for the dumping of material, while COE had issued 74 permits.

RESPONSES TO QUESTIONS SUBMITTED BY SENATE COMMITTEE ON COMMERCE

Question 1

(a) Title II of the MPRSA directs the Secretary of Commerce, in coordination with EPA, to initiate a comprehensive and continuing program of monitoring and research on the effects of ocean dumping. Responsibility for the conduct of this program has been delegated to NOAA by the Secretary of Commerce.

A formal interagency agreement to provide for coordination between EPA and NOAA in a program of ocean disposal site baseline surveys and evaluations is currently being negotiated. This program is consistent with the coordination required under the Act, and is intended to assure that NOAA programs of monitoring and research, while fulfilling NOAA's mandate under Title II of the Act, also provide information required by EPA for site evaluation and management. In this regard a joint EPA and NOAA survey has been conducted at the deep water dump site, 106 miles S.E. of Ambrose Light. Analyses of the data obtained from this survey is nearly completed, and a report will be prepared on the findings. A second survey of this same site is scheduled for May and will include the utilization of a manned submersible for ocean bottom studies. NOAA and EPA also collaborated on a survey of the DuPont and Philadelphia disposal sites in EPA's Region III. The data analyses of this survey has not been completed to date.

A special case monitoring effort was required for determining the effects on the marine environment of ocean incineration of chemical wastes. On very short notice, NOAA made available to EPA, on a reimbursable agreement basis, the National Marine Fisheries Vessel "Oregon II." EPA provided the scientific personnel for the two monitoring cruises in the Gulf of Mexico. The Coast Guard also cooperated in this effort in providing aerial surveillance during the incineration.

While not considered as one of the agencies with which coordination is required under the Act, it should be noted that upon request from EPA, NASA Goddard personnel quickly supported EPA's monitoring program through making their personnel and specialized equipment available to assist in detecting the HCl plume created by the incineration of these chemical wastes. A full technical report on the ocean incineration monitoring effort will be forwarded to the Committee upon its completion.

EPA and NOAA are also coordinating and cooperating extensively in the New York Bight. EPA has contracted a baseline survey of one of the alternate sludge disposal sites located 65 miles out from Ambrose Light. Data from the first survey were provided to NOAA. NOAA's Marine Ecosystems Analysis (MESA) Project is concentrating parts of its research program to support EPA. This project includes large-scale field studies of such ocean processes as physical circulation, sediment transport, and biological productivity.

(b) Financial data concerning NOAA's ocean dumping research and monitoring can best be provided by NOAA.

Question 2

(a) No State has proposed ocean dumping criteria relating to the dumping of materials into ocean waters within its jurisdiction.

(b) The Administrator has not received any proposals from States for ocean dumping criteria.

(c) Revised regulations, now in draft form for internal EPA clearance, will specify procedures for acting on State proposals for ocean dumping criteria.

(d) The Florida Department of Pollution Control did not propose any criteria. Although they had no objection to the criteria used, they objected to the organisms used in the bioassays and to the type of bioassay.

(e) There was no procedural disagreement regarding changes in the criteria.

Question 3

(a) Each of the Regional Offices of EPA receives copies of public notice of the Corps' intent to issue a permit for dredging. Each application is reviewed for its compliance with the EPA criteria for disposal in the ocean. Most of the permitted dredged material disposal in the ocean occurs in New York where about 50 permit applications are received and reviewed annually. In other regions, on an annual basis about 20 are reviewed in Region IV, 1 in Region III, and several in Region IX.

(b) The only way EPA or the Coast Guard would be able to know if a dredged material dumper was dumping without a permit would be for the Coast Guard to board the vessel for permit inspection. We have no reason to believe that the Corps issues any permits without submittal of the application to EPA in accordance with the statute.

(c) With respect to a number of permits we had determined that our criteria would not be met. The COE however has authority to issue a permit if it determines that "there is no economically feasible method or site available other than a dumping site the utilization of which would result in noncompliance with the criteria established pursuant to section 102(a) . . . or 102(c)."

(d) No EPA waivers from the specific permit requirements, as allowed for in section 103(d), have been necessary to date.

(e) The ocean dumping criteria (40 CFR, Part 227) contain specialized criteria for several different types of waste, including dredged material. Examples are containerized wastes, acid or alkaline wastes, and insoluble solid wastes. Specialized criteria are needed when wastes have characteristics to which the general toxicity criteria are not applicable or inadequate to determine their potential effects. By establishing special criteria for dredged material, EPA is recognizing that the pollution effect and environmental impact of dumping dredged material in the ocean are different from those of other kinds of wastes and a special test is therefore required to determine its probable impact.

Question 4

(a) Under the operating procedures of the ocean dumping permit program Regional Administrators may issue or deny permits and impose conditions on them, including moving permittees from one designated dump site to another. Only the Administrator may designate a new dumping site. Because of public concern that the existing dumpsite was too close to shore (40 miles) the Region VI Administrator decided not to issue a permit for the disposal of the DuPont wastes at that site. Upon his recommendation, however, the Administrator designated a new dump site 170 miles from Louisiana and 230 miles south of Pensacola in an area where the surface current drift was to the South and Southeast. The Region VI Administrator then issued a permit for the disposal of the DuPont wastes at the new site. As a result of litigation initiated by the Florida Department of Pollution Control, a public hearing on the permit was held, and the permit was ultimately revoked by the Administrator. This action was done because of questions raised concerning the bioaccumulative properties of Antimony in the waste; the Administrator felt that the questions raised were important, and that further research was necessary before dumping of the waste could be permitted.

(b) The move of the DuPont waste from one designated dump site to another was made at the request of DuPont because of a change in the location of their storage facilities. Since the new dump site was already designated, this was done as a permit modification, and notification was given by public notice on July 3, 1973 (see attachment). The dump site 230 miles south of Pensacola was selected based on general oceanographic information on the area. DuPont conducted a baseline survey on the site prior to any use, and the site was promulgated as an interim site in the *Federal Register*. No special notification was given any State prior to publication because it was the determination of EPA that there was no likelihood of the waste dumped at that site affecting any State's water resources. A third public hearing was held on the permit, however, after Florida objected to the dump site.

(c) Early in the program development stage, EPA identified and approved (on an interim basis) some 120 disposal sites. These sites were identified as having been used for disposal in the past. Most of the sites are for disposal of dredged material. Less than 20 of these are presently being used for disposal of material

other than dredged material. The actual site to be used for permitted disposal is determined on a case-by-case basis as are the permits. The site selected is considered to be one which is the most environmentally acceptable and which minimizes the probability of degradation of the marine environment and/or any coastal regions in the vicinity.

(d) EPA feels that notification of dump site selection is equally as important as the notice of permit issuance, and with perhaps only one or two exceptions, the site selected was indicated in the public notice. In the case of the exceptions, the sites selected were deemed to be the most environmentally acceptable.

(e) EPA has endeavored to notify all interested persons, environmental groups, State and local governmental agencies. Notices of application and opportunity for public hearings are mailed to these groups. These procedures apply equally to site selection and permit issuance activities.

(f) Only two dump sites were moved, both in response to expressed public concern at the nearness of the sites to valuable environmental features. The first site in the Gulf was moved seaward from the Flower Garden Reef and the second site was the DuPont site moved to 100 miles offshore from Louisiana. While no significant new data were presented in the public hearings, the changes were made in response to this public concern. In each case the best available information was used in making the changes.

All initially promulgated sites were selected simply because they were already in use, not on the basis of scientific information showing that they were good locations for dumping. In most cases no studies had ever been done on the sites in sufficient detail to determine if there were adverse effects. EPA felt that, on an interim basis, it was better to keep any adverse effects localized rather than contaminate large areas of the ocean. EIS's will be done on all sites other than those approved on an interim basis.

Question 5

(a) Dr. Harris maintains that the sludge bed in the New York Bight is moving. We do not agree. We do, however, agree with Dr. Harris that the sludge beds off Lido Beach and Jones Beach are at least in part derived from sources other than the 12-mile site.

(b) We understand Dr. Harris has developed a fingerprinting method for sewage sludge. The fingerprinting of sediments and other materials of this type has been demonstrated in earlier scientific papers. There is, however, no technique to verify the origin of sewage sludge, mere identification or analysis of trace metals is not sufficient for such a determination.

(c) This is answered by the above.

(d) The most recent determination of EPA is that the sludge bed has not moved and remains where it was 8 miles offshore as EPA has maintained in the past. While these sludge deposits are not moving, we believe that additional deposits made at this site have caused the contaminated area to increase its boundaries.

(e) No. The original timetable as proposed by EPA Region II is still being maintained. The target date remains July 1976 for the actual moving of sewage sludge dumping from the 12-mile site to a new site yet to be designated.

(f) We find no substance in the proposal by Dr. Harris that the discrepancy was a mere inadequacy of sampling by EPA since EPA and NOAA combined have taken extensive bottom samples in the area.

Question 6

(a) The statute requires that EPA apply and weigh nine criteria in determining whether or not to issue a permit. Interim permits are issued for wastes which do not meet environmentally acceptable limits, but for which there is no feasible alternative at the present time. While the economic cost is one aspect of feasibility, there are many others. The major factor determining feasibility at the present time is the time required to implement alternatives. Even when money is already available, construction of facilities takes time. In issuing interim permits, EPA requires the implementation of alternatives on as rapid a basis as possible, based on the availability of technology to achieve acceptable environmental results.

(b) Some applicants have been required to resort to temporary land storage where this is a feasible alternative during the development of technology. Land storage is not readily available in some cases.

(c) The feasibility of storage is not necessarily determined by volume alone, but may include consideration of other factors, e.g., inflammability. It is because certain wastes are unacceptable in the marine environment because of toxicity,

volume, or other reasons, that they can be dumped only on an interim basis until other means of disposal can be found and implemented. These types of wastes are being eliminated from ocean disposal as rapidly as possible.

(d) Locating all disposal sites arbitrarily off the edge of the continental shelf may result in large expenditures which do not achieve environmental benefits. Disposal of some types of wastes at such sites may possibly cause greater adverse impact than the use of sites closer to shore. There is no scientific justification at this time for imposing such a restriction on ocean dumping site location.

Question 7

(a) Implementation plans are required only by those whose material to be disposed of does not meet the criteria of Section 227 of the Final Regulations and Criteria. Of the 13 special permits issued, each met the criteria; alternatives to ocean disposal were considered during the application review, and no feasible alternative existed. The criteria, as developed, are such that the material which meets the criteria will cause no marine environmental damage.

(b) It is our interpretation of the statute that it is the intent of the Congress that, with the exception of the prohibited materials, ocean dumping should not be banned, but should be strictly regulated. The requirement for the development of implementation plans placed upon holders of interim permits places the responsibility on the holder to either have his waste meet the criteria for safe disposal in the ocean or develop an alternative to ocean disposal. While Section 221.1(j) does not place this development of ocean disposal alternatives on holders of special permits, alternatives must be considered upon re-application, and it is quite conceivable that alternatives may have developed during the permit period.

Question 8

(a) A compendium of recommended bioassay procedures for use in the ocean disposal permit program has been provided to all EPA coastal regions. At the Regional Administrator's discretion he may specify that one or more of the procedures be performed by a permit applicant. Because of rapid development in the field of bioassay methodology, procedures should not be "formalized" in the sense of standardization of methods but rather revised periodically as advances mandate. The procedures will be reviewed periodically and revisions will be made as necessary.

(b) Top priority is placed on the development of effective and specific bioassay procedures for marine organisms because of the dependence of the ocean dumping permit program and of several marine research projects on the information which can be obtained from them. However, the development of final bioassay procedures is not considered because all bioassay procedures need continual updating as new advances are made in bioassay methodology. EPA recently co-sponsored a workshop in chronic bioassay techniques to support the development of more sensitive measures of determining pollutant effects than those measures now in use. As a result, we have developed new guidelines and a handbook for these new procedures.

(c) Since the development of bioassay procedures are top priority items in several program areas, they are well funded. However, it is difficult to assign funding values to the development of bioassay procedures specifically for the ocean dumping permit program because the development and performance of bioassay tests are fundamental to both the Gulf Breeze Environmental Research Laboratory and the National Marine Water Quality Laboratory programs. In fiscal year 1975 the amount spent on bioassay-related studies was in excess of \$1.5 million. The methods now recommended for use in the permit program are based on the results of this research as well as other scientific information.

Question 9

(a) All wastes, except those which are insoluble or containerized, are subject to the requirements of the bioassay measurement of toxicity. In addition, the Annex I materials are either prohibited completely or prohibited as other than trace contaminants. The Convention does not set acceptable levels at which trace contaminants may be discharged to the oceans. EPA has set levels for acceptable limits for materials banned except as trace contaminants. These levels are based on ambient concentrations of these constituents in unpolluted parts of the oceans. EPA feels that its basis for regulation goes well beyond what the Convention requires in safeguarding the marine environment, and that its regulations are fully consistent with the letter and spirit of the Convention.

Question 10

(a) Good cooperation and coordination exist with the other Federal agencies involved with the implementation of the Act. At the Headquarters level, an Interagency Coordinating Committee was established with the Coast Guard, NOAA, Corps of Engineers, and CEQ. This committee is chaired by EPA, and although formal meetings are held only infrequently, informal discussions and telephone conversations are held frequently, with full cooperation. One specific example would be in the case of a quick need for a vessel to conduct marine monitoring of the effects of ocean incineration of chemical wastes in the Gulf of Mexico. NOAA was contacted and the National Marine Fisheries Vessel Oregon II was made available to EPA for two surveys under a reimbursable agreement. The Coast Guard also promptly responded with assistance in this same operation by providing fly-overs and aerial photographs of the operation. In other cases, the Coast Guard quickly responds to EPA's requests for fly-overs if they have an aircraft available. Open and frequent discussions are held between EPA and the Corps of Engineers when specific projects are being considered, and an area of question may appear pending.

(b) The passage of the Federal Water Pollution Control Act Amendments of 1972 and the Marine Protection, Research, and Sanctuaries Act of 1972 have established a Federal program of marine pollution abatement and control. We believe the overall program strategy being used in implementing these authorities has resulted in an effective program to protect the marine environment from degradation through control of ocean dumping. We do not foresee the need for changes in these authorities as they relate to ocean dumping regulation at the present time.

Question 11

(a) In the less than two years the Act has been in effect, EPA's monitoring of dump sites has not been nearly as extensive as we would like it. Time, manpower, and budgetary constraints have been such that the major emphasis has been on getting a program implemented. Conditions placed on the permits include specifying discharge rates and vessel speeds and times to assure that dispersion of the waste is done such that minimal impact on the marine environment will occur. Loran and fathometer records are required and, in the Gulf of Mexico, dumpers are required to navigate around the Flower Garden reefs by a radius of 15 nautical miles, and around the reefs found at Station Bank and Claypile Bank by 5 nautical miles.

(b) Determination of toxicity and concentration of material in question can only be made by physically sampling the material, preferably prior to departure from the port or enroute to the site. The volume of material can be computed by sounding of the tank (or by assuming the dump vessel is filled to registered capacity, but again this should be done prior to the dump).

The Coast Guard has not been routinely sampling waste materials unless a violation is suspected, or a specific request has been received from EPA. Coast Guard personnel have not been encouraged to take samples due to the potential hazards. Analyses of the substances' toxicity and concentration would have to be conducted by EPA or by a commercial laboratory, as the Coast Guard does not have the necessary facilities nor the expertise.

(c) Coast Guard airborne surveillance patrols have no capability to collect samples of dumped materials. Surface patrols and shipriders are better able, when not committed to other missions, to collect samples. However, as noted above, the Coast Guard does not have the scientific capacity to analyze the wide range of substances that are dumped to determine their chemical make-up.

ADDENDUM 1

EPA's participation in ICMAREP activities is based on its responsibilities under Section 104(a)(5) of PL 92-500 and under the MPRSA. While EPA has been participating in ICMAREP plan development, it is not at this time actively conducting monitoring activities specifically required or agreed upon as part of an ICMAREP plan.

ADDENDUM 2

This question was answered in the materials requested to be submitted.

ADDENDUM 3

Congressman DuPont has not provided EPA with the list he referred to at the House hearings last May.

ADDENDUM 4

The permit for ocean disposal of 240 tons of solid waste off California expired February 14, 1975. The permittee has gone out of this business and these wastes are currently being treated on an interim basis in the U.S. Navy's cooker-sanitizer at Long Beach by a commercial hauler. The Port of Los Angeles does not have a means of treating these wastes on a permanent basis at the present time. There is no known ocean dumping of solid waste in California at the present time.

EPA has agreed with the Coast Guard that galley wastes do not fall under the jurisdiction of the MPRSA.

ADDENDUM 5

Criteria for ocean outfall discharges are promulgated under Section 403(c) of PL 92-500. These criteria are the same as those promulgated under the MPRSA, and require the same type of evaluation to be made for ocean outfall discharges as for ocean dumping permits. In the evaluation of permit applications for either kind of disposal, EPA would have to make a determination as to which is the most acceptable means of disposal.

Both FWPCA and MPRSA require the same types of considerations using the same criteria. EPA believes there should be no reason to expect that trade-offs might be necessary in such cases.

ADDENDUM 6

Only two Corps permits at that time had been found to violate the criteria. Many more had been reviewed.

Senator HOLLINGS. We will next hear from Adm. Robert Price, Chief, Office of Marine Environment and Systems, U.S. Coast Guard.

STATEMENT OF REAR ADM. ROBERT I. PRICE, CHIEF, OFFICE OF MARINE ENVIRONMENT AND SYSTEMS, U.S. COAST GUARD; ACCOMPANIED BY COMDR. JAMES COSTICH AND LT. DAVID BAILEY

Admiral PRICE. Good morning, Mr. Chairman.

I am Rear Adm. Robert I. Price, Chief, Office of Marine Environment and Systems, U.S. Coast Guard. I am accompanied this morning by Comdr. James Costich on my right and Lt. David Bailey on my left of the Surveillance and Monitoring Branch, Marine Environmental Protection Division, at Coast Guard Headquarters.

It's a pleasure for us to appear before you today on behalf of the Coast Guard to discuss the Coast Guard's activities pursuant to the Marine Protection, Research, and Sanctuaries Act of 1972.

Since April 23, 1973, the effective date of title I of that act, over 180 permits for ocean disposal have been issued by the EPA and the corps. During the period from April 1973 to December 1974, approximately 500 loads of "toxic" material, such as certain inorganic salt and acid wastes, and 12,200 nontoxic loads, involving material such as dredge spoils, cellar dirt, and sewage sludge, have been dumped under those permits. We use the term "toxic" to indicate those wastes which demand the most attention; that is, those which are dumped at EPA's "toxic waste" sites.

EPA's discharge and dispersion requirements are designed to render the material nontoxic at the site.

The Coast Guard's enforcement program is keyed to close surveillance of the disposal of toxic materials and spot checks of nontoxic material dumps. Surveillance methods include escorting or interception of dumping vessels at the dump site by vessels or aircraft; the spot checking of ships' logs, the use of ship riders to ascertain position and dumping rate, and in the San Francisco area, the use of harbor radar installations. From April 1973 to December 1974, there were 983

ocean disposal surveillance missions; 36 violation notifications have been referred to EPA encompassing 154 apparent violations. I have for the record summaries of dumping activities and of enforcement cases referred to EPA.

Senator HOLLINGS. Why are so few referred to EPA of the suspected violations?

Commander COSTICH. Sir, there were 36 referrals to EPA. Approximately 15 of them consisted of multiple violations for failure to comply with the notification provisions of the permit.

Admiral PRICE. So they are embraced within the same violation notification to EPA.

Senator HOLLINGS. All right.

Admiral PRICE. The ocean dumping surveillance and enforcement program has prompted the development of advanced hardware and techniques. Coast Guard research and development is working on a sealed recording navigation system to be carried aboard dumping vessels which should help to provide more efficient enforcement with existing resources.

To date, the Coast Guard has seen no need to promulgate regulations on ocean disposal under the Marine Protection, Research, and Sanctuaries Act. However, we may do so in the future, if unforeseen problems arise or to implement adoption of the positive navigation and surveillance system.

Pursuant to title II of the act, the Coast Guard has the responsibility to cooperate with other agencies in their research on the effects of man-induced changes to the marine ecosystems. Coast Guard surface and air units have had years of experience in ocean monitoring efforts. Interagency agreements provide for support by Coast Guard units in these joint activities. Under title III, providing for designation of marine sanctuaries, the Coast Guard is likewise prepared to provide operational support to the associated agencies.

Thank you, Mr. Chairman, for this opportunity to briefly address you regarding Coast Guard involvement under the Marine Protection, Research, and Sanctuaries Act. If there are any specific questions, I will be pleased to answer them now or provide you with answers for the record.

[The tables follows:]

OCEAN DUMPING VIOLATIONS REFERRED TO EPA, APRIL 1973 TO DECEMBER 1974

Violation	Coast Guard district	Number of violations
Dumping short.....	3	3
	7	2
	12	1
Dumping long.....	7	1
Dumping without permit.....	(1)	1
	1	1
Attempted dumping without permit.....	1	1
Violating permit conditions ¹	1	2
	3	1
	7	1
	11	4
Failure to notify COTP.....	3	133
Liquid wastes spilled en route.....	3	2
No permit on board.....	3	1
Total.....		154

¹ Headquarters.

² Dumping at night, trash or garbage blowing over en route, not sinking on site, etc.

COAST GUARD DISTRICT OCEAN DUMPING ACTIVITIES, APRIL 1973 TO DECEMBER 1974

	Permits issued		Leads dumped		Enforcement referrals to EPA
	EPA	COE	Toxic	Nontoxic	
District:					
1.....	5	10	1	34	4
3.....	107	81	155	11,985	122
5.....					
7.....	4	6	19	68	4
8.....	11	0	309	3	0
11.....	16	0	0	9	4
12.....	0	6	0	111	1
13.....					
14.....	1	0			
17.....					
Headquarters.....					1
Total.....			484	12,210	36

15 of the 22 referrals contained a total of 133 apparent violations.	
Number of dumping operations for which surveillance was considered necessary by CG or EPA.....	531
Number of surveillance missions (both specific and general).....	983
Number of dumping operations for which monitoring was requested.....	3
Number of monitoring surveillance missions performed.....	5
Number enforcement referrals to EPA.....	36
Number of apparent violations referred to EPA.....	154

Senator HOLLINGS. Admiral, do you think the Coast Guard could well promulgate regulations with respect to navigation devices so that these vessels out dumping can get a fix on the dump site? They go out without navigation equipment, and they perform the dump and miss the site. The purpose of the act is that they dump in a particular area, not just generally.

Do you think you could promulgate regulations so that those vessels that are employed in ocean dumping comply with certain requirements from navigation devices?

Admiral PRICE. I think this is possible and is related to the decision as part of the national navigation plan to employ loran-C in the coastal zone for improving navigation along the shores of the United States. It would certainly be possible to require installation of loran-C equipment. What we had in mind to give assurance that the dumping that actually took place on the dump site was a sealed device that would use the loran-C network and would leave behind a recorder trace that the vessel had actually complied. That is what we have under present development.

Senator HOLLINGS. Sir, we have some other questions that we will submit for the record unless you wish to add anything. We appreciate you and your associates being with us this morning.

Admiral PRICE. Thank you, sir.

[The questions and answers referred to follow:]

U.S. SENATE,
COMMITTEE ON COMMERCE,
Washington, D.C., February 19, 1975.

Adm. OWEN SILER,
Commandant, U.S. Coast Guard,
Washington, D.C.

DEAR ADMIRAL SILER: The Senate Commerce Committee is preparing for oversight hearings on the Marine Protection, Research, and Sanctuaries Act of 1972 (the Ocean Dumping Act). In order to more adequately prepare for comprehensive and adequate oversight, the Committee would appreciate receiving certain materials and answers to the attached questions regarding your agency's responsibilities under the Act.

I would appreciate your cooperation in expediting a response to this request as soon as possible. If you need further information about our needs, please contact James P. Walsh, Staff Counsel for the Committee at 224-9347. For your information and planning, we hope to hold hearings on the Act in mid-March.

I look forward to your response.

Sincerely,

WARREN G. MAGNUSON, *Chairman.*

Enclosure

COAST GUARD

MATERIALS REQUESTED AND QUESTIONS CONCERNING PUBLIC LAW 92-532, THE MARINE PROTECTION, RESEARCH AND SANCTUARIES ACT OF 1972

I. Materials requested

1. Any regulations or operating procedures issued pursuant to section 108 of the Act.
2. All information concerning enforcement activities and any evidentiary material compiled concerning the Coast Guard's enforcement of this Act.
3. All fiscal and budgetary information concerning Coast Guard expenditures in implementing the Act.

II. Questions

There is a great deal of interest in how the Coast Guard monitoring and surveillance system works. (a) Do all involved Coast Guard stations have complete lists of all dumping permits issued, both by EPA and COE? (b) Does the Coast Guard accompany all dumpers to the dump sites, or does the Coast Guard patrol the dump area and record who has dumped? (c) Does the Coast Guard investigate all barges or other vessels with a dumping capacity to determine if the vessels carry a permit? (d) Does the Coast Guard periodically check out seemingly valid permits to ensure their authenticity? (e) Does the Coast Guard take samples of what is dumped to ensure that the material is of the nature specified in the permit? Does the Coast Guard have the capacities to analyze the material or does it forward samples to the EPA? (f) Are dump sites marked by buoys or are they just identified by coordinates? (g) If all dump sites were located far from shore perhaps off the Continental Shelf, would the Coast Guard's monitoring and surveillance capabilities be taxed by either a methodological weakness or by manpower financial inadequacies? Does the Coast Guard have a research program under way? (h) Does the Coast Guard monitor dredging operations and dredged material disposal less closely than commercial dumping of industrial wastes? Than municipal wastes? (i) As a practical matter, if a barge came down the Mississippi to New Orleans or down the Hudson to New York, would the Coast Guard always be aware of its arrival or departure from port, day or night, or would actual observation be required to know of its' movements? (k) Does the Coast Guard employ any advanced technologies such as infra-red photography specifically for the purpose of monitoring day or night dumping?

DEPARTMENT OF TRANSPORTATION,
U.S. COAST GUARD,
Washington, D.C., March 13, 1975.

Hon. WARREN G. MAGNUSON,
Chairman, Committee on Commerce,
U.S. Senate, Washington, D.C.

DEAR MR. CHAIRMAN: This is in response to your letter of February 19, 1975, which requested certain materials and answers regarding the Coast Guard's responsibilities under the Marine Protection, Research, and Sanctuaries Act of 1972 (MPRSA).

With respect to the materials requested:

1. The Coast Guard has long-standing regulations addressing the handling, stowage and storage of virtually any hazardous material, aboard vessels and at waterfront facilities. These regulations were written in the interest of port and vessel safety; while not initially promulgated as an enforcement tool for the ocean dumping program, ocean dumpers are subject to these regulations. Between the Environmental Protection Agency's (EPA) regulations and our ability to impose surveillance and enforcement-oriented conditions upon the dumper via his permit, we have as yet seen no need for additional regulations. We are, however, aware that we have this option and may utilize it for such purposes as requiring certain minimum navigation and/or tracking devices.

2. Almost 200 suspected violations of the Act, the ocean dumping regulations, and/or the conditions of the dumping permit have been investigated by Coast Guard units since April 1973. More than 30 referrals were subsequently made (some of them for multiple infractions) to EPA. Enclosure (1) contains copies of the evidentiary material involved.

3. The majority of Coast Guard operations are multi-mission in nature; because of this, fiscal statistics for any one mission or program are difficult to determine accurately. The present level of effort per year has cost approximately \$154,000. With the exception of \$100,000 for research and development of an ocean dumping surveillance system, all resources have come from those programmed for other missions. 23 personnel and \$29,000 (recurring) were approved for FY75 and will be available to the district offices and operating units in early FY76. Enclosure (2) outlines the Third Coast Guard District's fiscal data for CY74; the Third District includes the New York Bight, where the vast majority of ocean dumping occurs.

With respect to your specific questions:

(a) All Coast Guard units directly involved with the ocean dumping receive copies of EPA and Corps of Engineers (COE) permits. Other units, which could conceivably become involved, are given more general information, and direction to report any suspected violation; some routinely report any sightings of dumping operations to the appropriate Coast Guard Captain of the Port for comparison with those authorized.

(b) The Coast Guard does not accompany all dumpers to the dumpsites; nor does it maintain continuous presence at each site. The goal we have set is to conduct surveillance of all dumps at "toxic waste" sites and 10% of all other dumps. (It should be noted here that while the undiluted waste itself might be toxic, EPA's discharge and dispersion requirements render it non-toxic.) The usual methods of surveillance are by vessels, aircraft, shipriders or land-based radar; the type of surveillance is determined by the distance to the dumpsite, the toxicity of the material involved, and the resources available. Some surveillance is in response to specific dumping operations and some is "general" in nature (random coverage of sites and other suspect areas).

(c) Any vessel has a capacity to conduct ocean dumping as defined by the MPRSA. Normally, however, only those vessels known to be involved in and those others specifically designed for ocean disposal are investigated. Dumping in other than "ocean waters" (as is often the practice with dredged material) is not controlled by the MPRSA and thus requires no permit under this Act.

(d) Yes, the Coast Guard does determine authenticity of dumping permits on a random basis when the vessels are boarded in port, by inspection of the permits and comparison with copies received from EPA and COE.

(e) The Coast Guard has not routinely sampled materials dumped or to be dumped unless a violation is suspected or a specific request is received from EPA; USCG personnel have not been encouraged to take routine samples due to the potential hazards involved. Analysis of a substance's makeup, toxicity, and concentration must be conducted by EPA or a commercial laboratory as the Coast Guard does not have the necessary facilities or the expertise.

(f) All approved dump sites are identified by coordinates; none are marked with buoys.

(g) The Coast Guard's present surveillance and monitoring capabilities would be severely taxed by relocation of all dump sites to positions far offshore. This would be primarily due to financial and manpower limitations. Our Office of Research and Development has developed a prototype electronic navigation and tracking system to ease the burden on USCG resources. Three of these systems will be installed aboard dumping vessels in the New York and Galveston areas in April for several months of evaluation. The systems are sealed and record time vs. position data on magnetic or punched tape; they also indicate to the dumper his present position from two LORAN-C signals. The feasibility of dump sensors is also under study to complement the basic system. While this "black box" concept promises a degree of relief, we do not see it as a panacea; increased distance to dump sites will still tax our capabilities.

(h) The Coast Guard does place higher priorities on certain types of materials than on others. The highest priority is assigned to those materials which EPA considers "toxic." Receiving slightly less attention are "non-toxic" industrial wastes and sewage sludge. Dredged materials and other inert materials (e.g., "cellar dirt," rock and sand) are not ignored but have the lowest priority, especially in view of the fact that over 90% of dredged spoils are dumped by the Corps of Engineers which not only permits its own dumping, but also determines where it should be dumped.

(i) If a dumping vessel with a permit came down the Mississippi River to New Orleans or down the Hudson River to New York, the operator would be required to contact the Coast Guard prior to departure from point of loading and at any other point at which the Coast Guard requires notification. Unless located in an area where the Coast Guard operates a Vessel Traffic System, however, no other vessels are routinely required to file movement reports or "sail plans" and it is quite conceivable that a vessel could reach the ocean unnoticed. The vessel would still risk detection by "general" surveillance patrols, of course.

(j) The Coast Guard's interim airborne sensor system has been evaluated as a tool in ocean dumping enforcement; however, it has shown significant limitations. This system, consisting of infrared and ultraviolet scanners, detects thermal anomalies (IR) and reflectance anomalies (UV). The IR sensor can only detect materials which differ in temperature from the ocean's surface (not a common occurrence), night or day. The UV sensor, is limited by low ambient light conditions, and cannot see through fog or clouds. Our advanced prototype sensor system consists of IR/UV sensors, a side-looking radar, a passive microwave imager and a low light level television. To date, this advanced system has been tested and evaluated only in the Pacific Ocean and Great Lakes where dumping is extremely limited or non-existent. Presently under consideration is the installation of this prototype system on an operational HC-130 aircraft for utilization in several Coast Guard mission areas. An effort will be made at that time to evaluate its capabilities in ocean dumping surveillance and enforcement. We have also programmed future research and development for the enhancement of remote sensing of dumping activities, beginning with a tagging systems feasibility study in FY 76.

We hope that this reply is responsive to your needs. If the Coast Guard can be of further assistance, please do not hesitate to contact us.

Sincerely,

O. W. SILER,
Admiral, U.S. Coast Guard, Commandant.

Enclosures.

Senator HOLLINGS. The next witness is Mr. David Wallace, Associate Administrator for Marine Resources, NOAA. We welcome you and your associates here to the committee and we will be glad to hear from you at this time.

STATEMENT BY DAVID H. WALLACE, ASSOCIATE ADMINISTRATOR FOR MARINE RESOURCES, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, DEPARTMENT OF COMMERCE; ACCOMPANIED BY JAMES W. BRENNAN, DEPUTY LEGAL COUNSEL; AND DR. DONALD P. MARTINEAU, DEPUTY ADMINISTRATOR FOR MARINE RESOURCES

Mr. WALLACE. Thank you, sir.

I'd like to present to you my associates. On my left is Mr. James Brennan, who is the Deputy Legal Counsel for NOAA; and on my right is Dr. Donald Martineau, who is the Deputy Administrator for Marine Resources and works with me.

We have a statement, Senator. It's rather long.

Senator HOLLINGS. Why don't we include it in the record and you can highlight it or summarize, if you wish.

Mr. WALLACE. Thank you, sir. I believe that that would expedite the matter.

I would like to touch upon two or three parts of the testimony to emphasize specific things, if you don't mind, sir.

I'd like to touch upon title I first, ocean dumping. Title I outlines the regulatory provisions of the act through a system of permits, criteria, and dump site designations. While these regulatory functions

have been assigned to the Environmental Protection Agency, the Corps of Engineers, and the Coast Guard, NOAA actively works with these agencies by providing advice and comments in the formulation of regulations; by commenting on ocean dumping permit requests within the context of the Fish and Wildlife Coordination Act, as amended; and by providing environmental assessments of existing or proposed dump sites through the use of our scientific and technical expertise.

Senator HOLLINGS. Could it be coordinated even further? I just ask you from your experience. Everyone says they are getting along fine and they are happy, but that's the Government witnesses. I have been trying to build a bridge in my backyard and it involves going over the marshlands. We're in with the Fish and Wildlife, in with the Coast Guard, we have to go to NOAA. It might be pleasant up here, but down there trying to build a bridge in your own backyard, you'll see a royal headache with so many agencies being involved.

Now, I realize why, because that's the only way we can try to bring this in and put it on the statute books, but then after a certain experience and test run, from your experience, is there any way you can suggest to facilitate it and make it simpler to either administrate from your end or be complied with from the other end? This committee would appreciate any suggestions.

Mr. WALLACE. Senator, first, I believe that it's a tendency on the part of Government to regulate and each agency tends to carry on its own functions in that regard. As a consequence, it oftentimes develops that there are four or five permits that will be required by various agencies for the same activity.

Senator HOLLINGS. Now with that comment in mind, with this specific law in mind, how can we improve it? That's not necessarily to be answered this very minute, but you think of that and let your lawyer come up and say, "Look, we can cut through a lot of this red tape by letting just one agency have the responsibility"—even if you can't take it on from the others, at least check the other agencies, not necessarily instant banking, but if you go to one window and get the permit and you know it was right or wrong, and you deal with one group, then you'd be fine; but half of the Senators' time is spent spinning around here with constituents running from one office to the other trying to get the thing packaged.

Mr. WALLACE. We'll be happy to respond to you, Senator.

[The following information was subsequently received for the record:]

A most apparent need, particularly at the Federal level, is to provide persons subject to the requirements of a variety of laws with respect to a specific project with a simplified process of complying with all the legal requirements. At the present time, a person desiring to carry out a medium-scale operation may require a variety of Federal permits which are secured in sequence. It has been suggested that a "one window" approach whereby an applicant requiring Federal authorizations could apply for one permit covering all aspects of his proposed activity would be an improvement. This would require additional legislation and a requirement for interagency coordination to assure that all factors involved would be fully considered in the "one window" process which would be assigned to a "lead" agency. There may be other systems as well. For example, if the coastal zone management program of a state adequately takes into account all factors required by the Coastal Zone Management Act, and all affected Federal agencies are given a full opportunity to consult in the development of that plan, it may then be

possible to rely on the issuance of a state land or water-use permit for activities to be conducted within the coastal zone of a state having an approved plan. This would avoid the requirement for many of the Federal level authorizations which would otherwise be required. This approach would provide speedy processing and effective local involvement in the decision making process. It would of course, require congressional action and could not be implemented until appropriate state coastal zone management plans were in place.

Senator HOLLINGS. All right.

Mr. WALLACE. I'd like to move along here by saying that we are deeply involved in insuring that dumping operations are conducted in a manner that is consistent with the requirements of the Fish and Wildlife Coordination Act. For example, partly as a result of NOAA comments on seven dumping permits near brown shrimp spawning grounds in the Gulf of Mexico, EPA has reduced the total dumping of chemical wastes in gulf waters from over 1 million tons in 1973 to an estimated 100-120,000 tons in 1975.

NOAA also has contributed its scientific expertise to EPA regional offices by assisting in evaluating potential new dump site locations and assessing the impact of ocean dumping activities.

The EPA Region II has requested NOAA to comment and provide information to aid in the designation of an alternate sewage sludge dump site for the New York Bight area. While we are concerned that a new dump site will result in some damage to important marine resources in the area and that immediate relocation of the existing dump site is not required at this time, we do recognize the need to plan for possible relocation of the dump site to accommodate increasing quantities of sewage sludge that are being dumped in the bight. Consequently, we responded to the EPA request with the recommendation for two potential new dump site areas. EPA is now undertaking the preparation of an environmental impact statement for these new areas. The NOAA marine ecosystems analysis (MESA) project has been directed to provide environmental/ecosystem data for these dump site areas by August 1975 to meet EPA requirements.

NOAA is also working with EPA in the assessment of specific dump sites now in use. These efforts are to evaluate the effects of dumping operations.

Title II assigns to the Department of Commerce responsibility for initiating programs of research and monitoring of the effects of ocean dumping as well as research with respect to the long-range effects of pollution, overfishing, and other man-induced changes to ocean ecosystems. NOAA has in preparation an annual report to the Congress on ocean dumping research for calendar year 1974 and recently submitted its second annual report to the Congress on ocean pollution, overfishing, and offshore development. I would like to highlight briefly some of the more significant activities and achievements being conducted by NOAA relative to title II of the act.

With respect to ocean dumping research, NOAA activities are focused on the New York Bight MESA project; on selected dump site investigations; and on studies by sea grant institutions covering the environmental effects and economic aspects of ocean waste disposal. In regard to research on long-range effects of man on ocean ecosystems, NOAA activities emphasize the assessment of living marine resources and the impact of fishing efforts, marine pollution research, the impact of OCS oil and gas development, and deep ocean mining.

Senator HOLLINGS. And how much money did you receive to do that work?

Mr. WALLACE. Mr. Chairman, at this moment there has been no specific appropriation for these activities. Some of the activities on overfishing, for example, have been carried out as part of our National Marine fisheries Service normal activity.

Senator HOLLINGS. Yes. For the comprehensive research the Congress said that NOAA under Commerce should be the lead agency under section 201 and you get no appropriation for it, and the other agencies—the corps got \$30 million; EPA got a million; and yet the one agency that Congress designated should be the lead agency gets zero dollars. How do you explain that?

Mr. WALLACE. Well, it's a difficult problem for us. We have requested funds for these activities, but it has not been possible to get the funding through the Department of Commerce or OMB. As a consequence, we have not been able to have these activities funded specifically.

Senator HOLLINGS. Since almost all of the country's ocean dumping occurs in that New York Bight, if you had a study of that, wouldn't you have necessarily a study of ocean dumping and its effects?

Mr. WALLACE. Yes; Senator, and in a way we have had some funding for this because, as you probably recall, we started our New York Bight marine ecosystem studies prior to the passage of the Ocean Dumping Act and it was funded by the Administration and Congress, so that we did have funds to carry on the study. We have in the past 2 years modified this research project to the point where 90 percent of it is focused on this ocean dumping matter because it's obviously the most critical need that exists in the area.

So, in that context, we have had funds to carry on ocean dumping research. It's also true that some of the things that we are learning in the New York Bight can be transferred to other coastal areas, although I must admit this isn't quite as simple as it might seem, because the general local conditions oftentimes have a very specific bearing on how the results come out. So that results off Galveston Bay in the Gulf of Mexico, for example, might not be extrapolated from those that you find in the New York Bight.

Senator HOLLINGS. Well, how well do you coordinate with EPA and the Corps of Engineers to determine the character and type of research that's conducted?

Mr. WALLACE. Well, in our MESA effort in the New York Bight, for example, we have two advisory committees. We have a technical advisory committee, but there's also a public advisory committee, and by the use of such committee we actually determine the kinds of programs and the kinds of research that are necessary.

Senator HOLLINGS. Do you tell the corps what to study?

Mr. WALLACE. We determine the kinds of things that we are studying in our own way because it's basically our responsibility to carry on research. We do not tell the corps the kinds of studies that they should be carrying out in their \$30 million project which I understand is headquartered in Vicksburg. I'm not really fully aware of what is involved, Senator.

Senator HOLLINGS. Thank you very much. Go right ahead.

Mr. WALLACE. I was going to discuss a little bit what we're doing in the New York Bight, but I believe the matters that we have been discussing here are sufficient and this will save some time, Senator.

I do want to point out that the New York Bight project has a finite time period and we expect it to be completed in 1980, and then we will be carrying on other kinds of activities elsewhere.

While our ocean dumping research is concentrated in the New York Bight area, NOAA also is examining the possible usage of dump sites beyond the edge of the Continental Shelf. In May 1974, NOAA conducted an environmental assessment of the deepwater dump site 106 miles southeast of New York harbor where 36 permits authorizing disposal of wastes have been issued by EPA. This operation, involving scientists from NOAA, EPA and several universities, collected data on the effects of dumping activities. A second survey of this site is planned for July 1975 using the submersible *Alvin* as well as surface vessels.

Senator HOLLINGS. Where will that second survey be, of July 1975?

Mr. WALLACE. It's going to be in the same area, the deepwater off-the-shelf dump site, 106 miles from the entrance to New York Harbor. We feel that a submersible may be an appropriate adjunct to use for this kind of study.

Senator HOLLINGS. Would the Woods Hole folks work with you, Dr. Bob Edwards?

Mr. WALLACE. Yes. The people up at the laboratory at Woods Hole will definitely be involved. The *Alvin*, as you know, Senator, operates out of Woods Hole and is supported on an annual basis by several parts of the Government; it will be assigned for this specific purpose.

Senator HOLLINGS. Very good.

Mr. WALLACE. In addition to these cooperative site surveys, we have an interagency agreement with EPA concerning baseline surveys and evaluations of ocean disposal sites. Under this agreement, EPA will identify its requirements and priorities for disposal site surveys and evaluations and NOAA will provide detailed study plans to EPA and conduct the necessary studies.

NOAA believes that all ocean dumping that adversely alters or impacts the marine environment should eventually be terminated. EPA is supporting many studies designed to enhance our technological capability to achieve this objective and we look to these programs and working with EPA in the development of alternatives to ocean dumping.

Senator HOLLINGS. That statement as to "adversely alters or impacts the marine environment," being an expert in the fisheries, do you ever see us opening up the oceans for the dumping of sludge?

Mr. WALLACE. Certainly, Senator, I don't look upon the ocean as an appropriate body for disposal of waste products and certainly I consider this an adverse use of the ocean. It is possible that under certain circumstances—and I can't cite a specific example—sludge might actually replenish nutrients that might be in short supply in certain parts of the ocean.

As you probably have heard, there's a study being carried on at Woods Hole by Dr. John Ryther in which he's actually studying the production of oysters and other marine organisms using the effluents from a sewage disposal plant as a nutrient source; this is one way in which you might utilize these wastes.

I'm not advocating this, but I think that we have to watch these kinds of studies over the long term. Basically, though, we can't use the ocean as a disposal area because if we do then we could destroy the very basis for the production of the fish.

Senator HOLLINGS. Well, they're not working very well up there right now. They looked promising at first, but now it doesn't.

Mr. WALLACE. You have had a chance to observe Dr. Ryther's efforts?

Senator HOLLINGS. We called up there 2 weeks ago.

Mr. WALLACE. Well, that's the reason that I'm a little cautious about how we might possibly, under certain circumstances, use the sludge. The nutrients are important, but it's the contaminants and the excess of these nutrients that really cause the major problem.

I would like now to touch just a little bit on research on oil pollution because NOAA has been doing some work in this area. Our oil pollution research is centered on the west coast and Alaska where NOAA laboratories are investigating the acute and chronic effects of petroleum compounds on fish and shellfish. NOAA and the Maritime Administration, with the assistance of the National Bureau of Standards, are jointly sponsoring oil pollution baseline surveys in the Pacific Ocean to determine the existing distribution of hydrocarbons along selected tanker routes.

Senator HOLLINGS. Do you find any case wherein the oil does the fish any good?

Mr. WALLACE. Well, I can't say that I can cite you a specific instance where that is the case, Senator.

Senator HOLLINGS. Well, you know their present PR program. They're got billions to spend and you can't get the evening news without seeing the happy little fish running around the oil derricks, as if it's a fine thing for them. That's the way to help the propagation of your fish. I mean, you and I know from the nickel and dime spills down in the Gulf that have hurt the fish and they have hurt particularly the crab and shrimp and other things of that kind.

Mr. WALLACE. The shrimp fishermen particularly have been having a difficult time.

Senator HOLLINGS. That's right. Go right ahead.

Mr. WALLACE. NOAA has other studies underway to determine the effects of heavy metals on marine animals, including a major program for determining baseline levels of metals in seafood. Concentrations of trace metals and other chemical elements are being determined in some 200 species of marine fish and shell-fish from the Atlantic, Pacific, and Gulf coasts and from the Gulf of Alaska.

One of our concerns has been the heavy fishing effort being exerted in the northern Pacific Ocean and the eastern Bering Sea. In negotiations with the Japanese last year, analyses of fish stocks by our scientists were instrumental in achieving agreements for substantial reductions in fishing effort on Alaska pollock, tanner and king crabs, halibut, and herring. For the past 3 years, the United States also has been actively striving to reduce fishing pressure on fish stocks in the Northwest Atlantic, and an agreement was reached to reduce the 1975 total allowable catch levels for 54 separate stocks in that region.

And up until now, as you know, we have been depending upon international organizations to carry on whatever conservation mea-

asures were to be done. This has been not a very successful program and, as a consequence, many of our stocks of fish are in the state of depletion.

Senator HOLLINGS. Of course, that's a side issue, but again, what is your experience or observation with the international approach, specifically the Law of the Sea Conference? Did you get anything out of it? Was any progress made?

Mr. WALLACE. Well, I think the Law of the Sea Conference has been a rather discouraging kind of procedure up to this point with little real progress made toward the determination of appropriate fisheries regime. I think on the basis of this, we have to take a very hard look at where we're going.

Senator HOLLINGS. Well, on the basis of it, do you think that there will be any fish left waiting on the law of the sea or should we move to protect our fishing unilaterally?

Mr. WALLACE. Well, Senator, I think that we have to take some rather aggressive action to manage our fisheries off our coast and I feel that this has to be done in the proper scientific way so we can make sure that our species are adequately protected, and I would certainly hope that we can move in this direction in the reasonably near future.

Senator HOLLINGS. Very good, sir.

Mr. WALLACE. I would like to point out that I have been the U.S. Commissioner on one of these international commissions called the International Commission for the North Atlantic Fisheries. It has been one of the international agencies that has really tried to come to grips with this matter of conservation and a planned program of protection, and 3 years ago we started a program of phasing down the intensive fishing to the level where all of the stocks could be restored. Now history can only record whether this is successful or not because it's only been going for 3 years and we really haven't been able to fully evaluate this. Dr. Edwards and his people at the NOAA's Northeast Fisheries Center up in Woods Hole are aggressively involved in this, as you know.

Senator HOLLINGS. Yes.

Mr. WALLACE. I'd like to now switch to title III—Marine Sanctuaries, and I realize that I'm taking a little bit of time.

The marine sanctuary title of the act is a powerful tool for conservation and protection of some of the Nation's more valuable marine areas. NOAA believes that the program for implementing the authorities in title III must be developed and applied wisely and carefully to accomplish the intent of the legislation which is to assure balanced protection and utilization of unique coastal areas.

In the first report to Congress on title III, NOAA reported on a comprehensive study to develop broad conceptual approaches to implement the marine sanctuary program. Proceedings of the study were made available to the cognizant congressional committees. Subsequent to this study, guidelines were published in the Federal Register of June 27, 1974, setting forth the overall policies, concepts, and procedures under which the marine sanctuaries provisions are to be administered. Sanctuaries may be established according to these guidelines for five different general purposes. These are for habitat protection, species conservation, research, recreational and esthetic value, and unique features.

Since publication of the guidelines for such sanctuaries, five nominations have been received for areas off North Carolina, Florida, Washington, and California. The nomination of the U.S.S. *Monitor* wreckage site off North Carolina has resulted in the designation of the Nation's first marine sanctuary on January 30, 1975.

We currently are processing a nomination to establish a coral reef habitat preserve seaward of Florida's John Pennekamp Coral Reef State Park. The nomination is now under review by Federal agencies, industry, and conservation groups.

There have been other proposals for various kinds of marine sanctuaries, including one in Florida to establish a Manatee Sanctuary in the Crystal River of Florida. We will be continuing to examine these various proposals.

I'd like to summarize by saying there is active cooperation between NOAA and the regulatory agencies, particularly EPA, with respect to the evaluation of permit applications and the establishment of ocean dumping criteria. A comprehensive ocean dumping research program is focused on the areas of heaviest dumping activity along our coast. NOAA scientific and technical capabilities are contributing to the environmental assessments necessary to determine the impact of man's activities on the oceans and their resources. And, we are proceeding with a program to establish marine sanctuaries to preserve valuable coastal areas.

Thank you, Mr. Chairman.

Senator HOLLINGS. We thank you, Mr. Wallace, very much, and your associates. There are a few questions we will submit for the record. Thank you very much.

[The statement follows.]

STATEMENT OF DAVID H. WALLACE ASSOCIATE ADMINISTRATOR FOR MARINE RESOURCES NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION OF THE DEPARTMENT OF COMMERCE

Mr. Chairman and members of the subcommittee: I appreciate having this opportunity to appear before your Subcommittee to discuss the National Oceanic and Atmospheric Administration's activities under the Marine Protection, Research, and Sanctuaries Act of 1972. With this legislation, the Congress assigned to the Department of Commerce and NOAA important responsibilities for the protection of the marine environment. On this occasion I would like to describe for you the progress we have made to date in implementing the Act.

Title I—Ocean Dumping

Title I outlines the regulatory provisions of the Act through a system of permits, criteria, and dumpsite designations. While these regulatory functions have been assigned to the Environmental Protection Agency, the Corps of Engineers and the Coast Guard, NOAA actively works with these agencies by providing advice and comments in the formulation of regulations; by commenting on ocean dumping permit requests within the context of the Fish and Wildlife Coordination Act, as amended; and by providing environmental assessments of existing or proposed dumpsites through the use of our scientific and technical expertise.

Last year NOAA provided comments to EPA for incorporation into their *Final Regulations and Criteria Governing Transport for the Dumping of Material into Ocean Waters—Guidelines for Management of Disposal Sites*. In addition, our National Marine Fisheries Service, in carrying out its responsibilities under the Fish and Wildlife Coordination Act, works with both the Environmental Protection Agency and Corps of Engineers in reviewing and commenting upon permit applications involving ocean dumping. In FY 1974, NOAA commented upon some 25 applications to the Environmental Protection Agency for dumping permits and approximately 6 Corps of Engineers dredging permits involving the disposal of dredge spoils.

As the agency concerned with the preservation of the habitat for living marine resources off our shores, we believe that NOAA has a responsibility to evaluate permit applications and advise these regulatory agencies as to the potential consequences of permit actions. In this way we are ensuring that dumping operations carried out under Title I of the Marine Protection, Research, and Sanctuaries Act are consistent with the Fish and Wildlife Coordination Act requirements. For example, partly as a result of NOAA comments on 7 dumping permits near brown shrimp spawning grounds in the Gulf of Mexico, EPA has reduced the total dumping of chemical wastes in Gulf waters from over 1 million tons in 1973 to an estimated 100-120,000 tons in 1975.

NOAA also has contributed its scientific expertise to EPA Regional offices by assisting in evaluating potential new dumpsite locations and assessing the impact of ocean dumping activities.

The Environmental Protection Agency/Region II has requested NOAA to comment and provide information to aid in the designation of an alternate sewage sludge dumpsite for the New York Bight area. While we are concerned that a new dumpsite will result in some damage to important marine resources in the area and that immediate relocation of the existing dumpsite is not required at this time, we do recognize the need to plan for possible relocation of the dumpsite to accommodate increasing quantities of sewage sludge that are being dumped in the Bight. Consequently, we responded to the EPA request with the recommendation of two potential new dumpsite areas. EPA is now undertaking the preparation of an Environmental Impact Statement for these new areas. The NOAA Marine Ecosystems Analysis (MESA) project has been directed to provide environmental/ecosystem data for these dumpsite areas by August 1975 to meet EPA requirements.

NOAA also is working with EPA in the assessment of specific dumpsites now in use. These efforts are to evaluate the effects of dumping operations. They will be discussed under Title II.

Title II—Comprehensive Research on Ocean Dumping

Title II assigns to the Department of Commerce responsibility for initiating programs of research and monitoring of the effects of ocean dumping as well as research with respect to the long-range effects of pollution, overfishing, and other man-induced changes to ocean ecosystems. NOAA has in preparation an annual *Report to the Congress on Ocean Dumping Research* for 1974 and recently submitted its second annual *Report to the Congress on Ocean Pollution, Overfishing and Offshore Development*. I would like to highlight briefly some of the more significant activities and achievements being conducted by NOAA relative to Title II of the Act.

With respect to ocean dumping research, NOAA activities are focused on the New York Bight MESA project; on selected dumpsite investigations; and on studies by Sea Grant institutions covering the environmental effects and economic aspects of ocean waste disposal. In regard to research on long-range effects of man on ocean ecosystems, NOAA activities emphasize the assessment of living marine resources and the impact of fishing efforts, marine pollution research, the impact of OCS oil and gas development, and deep ocean mining.

The principal NOAA research effort on ocean dumping is being carried out in the New York Bight as part of our Marine Ecosystems Analysis (MESA) Program initiated in 1973. The project has two basic objectives;

- Determining the fate and effect of pollutants on the New York Bight ecosystem, with priority on ocean-dumped contaminants; and

- Identifying and describing the important ecological subsystems, processes, and driving forces operating in the New York Bight, and defining their interrelationships and rates of change.

The primary near-term emphasis of the project is the delineation of the environmental effects of ocean dumping. Efforts to date have focused on: (1) delineating stressed areas; (2) identifying and quantifying the major pollutants; (3) characterizing existing dumpsites; and (4) investigating proposed alternate dumpsite areas, including the potential for dumping at the edge of the continental shelf.

The project is scheduled for completion in 1980, however, initial results to date indicate the following:

- Reduced abundance and diversity of bottom species have been observed in the vicinity of the sewage sludge and dredge spoil dumpsites. Increased incidences of fin erosion have been observed in the Bight, although establishment of cause and effect has not been made.

We have confirmed the presence of coliform bacteria at the sewage sludge dumpsite that can confer immunity to other bacteria, including pathogens, against antibiotics and heavy metals. The public health implications of this phenomenon are unknown. Further research into this matter is scheduled.

The portions of sewage sludge that have settled on the bottom have not formed any large lens of material and there is also no evidence of any general shoreward movement of this material.

Ocean disposal in the region, while justly of great concern, is not the most important source of contaminants. Contaminants from the waters of the Hudson River and associated bays are more important.

Available data show no net advantage to an interim move of the sewage sludge dumpsite to one of the two presently designated alternative sites 65 miles offshore. Further study is needed to determine whether one of these sites or a more distant one on or beyond the continental slope would be more acceptable for longer-term use.

The project also is providing leadership to the various local Federal and State efforts by developing the information and data required to strengthen the management decisions affecting the waters and associated resources of the New York Bight. In order to be responsive to the concerns of local government and of many private and public interest groups and organizations, NOAA has established an advisory committee which we drew upon frequently for advice in our project planning. Our plans for FY 1976 are to expand field and analytical efforts in the nearshore region of the Bight where the most important issues are contaminant loadings and their effects on man and on the living and nonliving resources of the Bight.

While our ocean dumping research is concentrated in the New York Bight area, NOAA also is examining the possible usage of dump sites beyond the edge of the continental shelf. In May 1974, NOAA conducted an environmental assessment of the deepwater dumpsite 106 miles southeast of New York harbor where 36 permits authorizing disposal of wastes have been issued by EPA. This operation, involving scientists from NOAA, EPA and several universities, collected data on the effects of dumping activities. A second survey of this site is planned for July 1975 using the submersible *Alvin* as well as surface vessels.

Also, in 1974, operational support was provided to EPA Region III. A research submersible was employed to investigate the sites for dumping sewage sludge from Philadelphia and for the disposal of toxic industrial wastes by DuPont. We are planning to assist EPA with a similar investigation later this year in this area.

In addition to these cooperative site surveys, we are completing an interagency agreement with EPA concerning baseline surveys and evaluations of ocean disposal sites. EPA will identify its requirements and priorities for disposal site surveys and evaluation and NOAA will provide detailed study plans to EPA and conduct the necessary studies.

NOAA believes that all ocean dumping that adversely alters or impacts the marine environment should eventually be terminated. EPA is supporting many studies designed to enhance our technological capability to achieve this objective and we look to these programs and working with EPA in the development of alternatives to ocean dumping.

As for research with respect to the effects of pollution on the ocean ecosystem, NOAA has focused on oil pollution and heavy metals. Our oil pollution research is centered on the west coast and Alaska where NOAA laboratories are investigating the acute and chronic effects of petroleum compounds on fish and shellfish. NOAA and the Maritime Administration, with the assistance of the National Bureau of Standards, are jointly sponsoring oil pollution baseline surveys in the Pacific Ocean to determine the existing distribution of hydrocarbons along selected tanker routes.

With these other Commerce agencies and the Intergovernmental Oceanographic Commission and World Meteorological Organization, NOAA also cosponsored, in 1974, a Marine Pollution Monitoring Symposium and Workshop. The purpose of the meeting was to bring together activities of various countries and develop guidelines for a common methodology of global marine pollution monitoring.

NOAA has other studies underway to determine the effects of heavy metals on marine animals, including a major program for determining baseline levels of metals in seafood. Concentrations of trace metals and other chemical elements are being determined in some 200 species of marine fish and shellfish from the Atlantic, Pacific, and Gulf coasts and from the Gulf of Alaska.

Besides assessing man's impact by pollution upon the oceans' living resources, efforts have been made toward reducing the impact of overfishing. This is being achieved through participation in international commissions concerned with the status and management of stocks.

One of our concerns has been the heavy fishing effort being exerted in the northern Pacific Ocean and the eastern Bering Sea. In negotiations with the Japanese last year, the analyses of fish stocks by our scientists were instrumental in achieving agreements for substantial reductions in fishing effort on Alaska pollock, tanner and king crabs, halibut, and herring. For the past three years the United States also has been actively striving to reduce fishing pressure on fish stocks in the Northwest Atlantic, and an agreement was reached to reduce the 1975 total allowable catch levels for 54 separate stocks in this region.

At the instigation of the United States, a special meeting of the International Commission for the Northwest Atlantic Fisheries (ICNAF) was held in October 1973 to design a quota system that would reduce fish catches off the U.S. Atlantic coast over three years in order to halt the serious stock decline and allow for the rebuilding of valuable fishery resources. Only this past November at a special meeting of ICNAF was further agreement reached on more stringent conservation measures for yellowtail flounder, herring, haddock, and hake. Much of our success in this instance was due to the extensive data base developed over the years by U.S. fisheries scientists which was available and used to support the U.S. position to reduce fish catches.

While these steps have been taken, it is still too early to evaluate the results of these conservation efforts. It will be several years before we can determine the rapidity with which these stocks are being restored.

As man turns to the development of other ocean resources we must also be concerned with the resulting impact upon the marine environment. In the development of OCS oil and gas, NOAA has been cooperating with the Department of Interior in related environmental assessment studies for the areas of the Alaskan continental shelf from the Gulf of Alaska to the Beaufort Sea. In addition, NOAA scientists also are carrying out selected studies in areas of the Gulf of Mexico and are developing others for the east and west coasts.

For the deep ocean, the capability for mining hard minerals, i.e. manganese nodules, is being developed. In this connection, NOAA initiated a Deep Ocean Mining Environmental Study (DOMES) in 1974 with a survey cruise to the southeastern central Pacific. A request is now before the Congress to undertake a major study in FY 1976.

Finally, NOAA has been most recently working with the Coast Guard in reviewing their draft regulations and guidelines for implementing the Deepwater Port Act of 1974 and, along with EPA, has been developing Environmental Review Criteria to be used to evaluate the impact of deepwater port development.

Title III—Marine Sanctuaries

The marine sanctuary title of the Act is a powerful tool for conservation and protection of some of the Nation's more valuable marine areas. NOAA believes that the program for implementing the authorities in Title III must be developed and applied wisely and carefully to accomplish the intent of the legislation which is to assure balanced protection and utilization of unique coastal areas.

In the first report to Congress on Title III, NOAA reported on a comprehensive study to develop broad conceptual approaches to implement the marine sanctuary program. Proceedings of the study were made available to the cognizant Congressional committees. Subsequent to this study, guidelines were published in the *Federal Register* of June 27, 1974, setting forth the overall policies, concepts, and procedures under which the marine sanctuaries provisions are to be administered. Sanctuaries may be established according to these guidelines for five different general purposes. These are for habitat protection, species conservation, research, recreational and esthetic value, and unique features.

Since publication of the guidelines for such sanctuaries, five nominations have been received for areas off North Carolina, Florida, Washington, and California. The nomination of the U.S.S. *Monitor* wreckage site off North Carolina has resulted in the designation of the Nation's first marine sanctuary on January 30, 1975. This designation is to assure protection of the historic and cultural values of the vessel. Access to the vessel for study and observation is now by issuance of a permit by NOAA. All proposals for study and requests for permits are subject to a thorough review by interested Federal agencies and scientific experts.

We currently are processing a nomination to establish a coral reef habitat preserve seaward of Florida's John Pennnekamp Coral Reef State Park. The

nomination is now under review by Federal agencies, industry, and conservation groups.

Senator Magnuson requested consideration of a proposal for a killer whale sanctuary in Puget Sound. We are awaiting the outcome of two study efforts on the whale population and behaviour before proceeding further with this nomination.

Another nomination being held in abeyance is for the establishment of a Florida Manatee Sanctuary in the Crystal River of Florida. As a result of the nomination, the Department of Interior has initiated action to develop additional protective measures for the Florida Manatee under authority of both the Marine Mammal Protection Act and the Endangered Species Act. The highly desirable feature of Interior's program is that protection will be afforded the Manatee not only in Crystal River but also in other parts of the animal's range.

Congressman Talcott has nominated a large area of the waters off the California counties of Santa Cruz, Monterey, and San Luis Obispo. The details of this nomination are being further developed to provide necessary information for evaluation.

We plan to continue to process nominations in a timely fashion and to work with Federal and State agencies to achieve the purposes of this Title.

In summary, there is active cooperation between NOAA and the regulatory agencies with respect to the evaluation of permit applications and the establishment of ocean dumping criteria. A comprehensive ocean dumping research program is focused on the areas of heaviest dumping activity along our coast. NOAA scientific and technical capabilities are contributing to the environmental assessments necessary to determine the impact of man's activities on the oceans and their resources. And, we are proceeding with a program to establish marine sanctuaries to preserve valuable coastal areas.

Mr. Chairman, that concludes my statement.

I will be pleased to answer any questions you or other members of your subcommittee may have.

UNITED STATES SENATE,
COMMITTEE ON COMMERCE,
Washington, D.C., February 19, 1975.

Dr. ROBERT WHITE,
Administrator, National Oceanic and Atmospheric Administration, Department of
Commerce, Washington, D.C.

DEAR DR. WHITE: The Senate Commerce Committee is preparing for oversight hearings on the Marine Protection, Research, and Sanctuaries Act of 1972 (the Ocean Dumping Act). In order to more adequately prepare for comprehensive and adequate oversight, the Committee would appreciate receiving certain materials and answers to the attached questions regarding your agency's responsibilities under the Act.

I would appreciate your cooperation in expediting a response to this request as soon as possible. If you need further information about our needs, please contact James P. Walsh, Staff Counsel for the Committee at 224-9347. For your information and planning, we hope to hold hearings on the Act in mid-March.

I look forward to your response.

Sincerely,

WARREN G. MAGNUSON,
Chairman.

U.S. DEPARTMENT OF COMMERCE,
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION,
Rockville, Md., April 8, 1975.

Hon. WARREN G. MAGNUSON,
U.S. Senate,
Washington, D.C.

DEAR SENATOR: I am pleased to forward to you as enclosures to this letter the information and materials you requested in your letter of February 19, 1975. We hope this response will assist the Committee on Commerce in preparing for the forthcoming hearings on the implementation of the Marine Protection, Research, and Sanctuaries Act of 1972, as amended. If the Committee requires any additional information in this regard, please advise me.

Sincerely,

ROBERT M. WHITE,
Administrator.

Enclosure.

Enclosure A.

Question 1. Although principal responsibilities for carrying out the provisions of Title I rest with other agencies, NOAA has an important function in Title I. In cooperation with EPA, NOAA is expected to provide advice and comment on the formulation of regulations and criteria concerning ocean dumping. (a) Has NOAA taken an active role in the promulgation of regulations and criteria? (b) Has NOAA sought to evaluate or substantiate claims of persons and organizations which have offered advice and comment on regulations and criteria? (For example, has NOAA tested or evaluated National Wildlife Federation suggestions for criteria requirements, or sought outside opinion on proposals for bioassay procedures?) (c) Is there an effective procedure by which criteria and regulations can be periodically reviewed and revised as better, more sensitive data become available?

Answer 1. (a) NOAA has taken an active role in providing views and comments on proposed criteria and regulations. In the past year we have reviewed (1) criteria for the preparation of an environmental impact statement addressing the alternate sewage sludge dumpsites in the New York Bight; (2) generic criteria for selection of dumpsites; (3) continued use of certain sites per Fish and Wildlife Coordination Act provisions; and (4) proposed disposal of chemicals by incineration. NOAA also participated in a dumpsite selection criteria symposium in September 1974 at Woods Hole, Massachusetts.

(b) The New York Bight Project Advisory Committee and Advisory Panels include representatives of groups which ordinarily offer such advice. The project office at Stony Brook responds to local inquiries and comments. The National Wildlife Federation suggestions have been reflected in the proposed EPA dumping regulations which will be reviewed by the MESA Program Office.

(c) In our view the present methods are adequate. These include direct consultations between scientists and laboratories, special workshops, and use of advisory panels.

Another way in which NOAA participates in the formulation of regulations and criteria is through the Sea Grant program. Sea Grant has funded various studies over the years that have enhanced the ability of EPA to set adequate standards and write effective regulations for ocean dumping. These include investigations into dredge spoil effects (Univ. of North Carolina, University of Rhode Island), ocean disposal of compacted wastes (University of Rhode Island), dumping of industrial wastes (Texas A&M), economic aspects of ocean disposal (University of Rhode Island), and monitoring studies of solid baled waste (University of New Hampshire).

Question 2. Although Section 102 (a) (I) of the Act calls for the utilization wherever feasible, of locations beyond the edge of the Continental Shelf, studies of the impact of dumping off the shelf were only "just initiated" as of May 1974. (a) Is not the impact of dumping off the shelf a major determinant of whether or not such dumping should be considered feasible? (b) If so, why was a study of the impact "just initiated" more than a year after the effective date of the Act? (c) How could NOAA informatively advise EPA on criteria and regulations for dumping and site selection of the impact in the whole area of off-shelf dumping was unexplored? (d) The overwhelming majority of dump sites presently selected are clearly not off the edge of the Continental Shelf, nor are they in a number of cases even as far out on the Shelf as feasible. Will NOAA make its off-shelf determinations quickly available to EPA when they are compiled, and at such time will NOAA strongly advise that the mandate of section 102(a) (I) be followed?

Answer 2. (a) A major determinant of whether off-the-shelf dumping is feasible or not is the environmental impact of such dumping. This must be ascertained with thorough analysis and understanding of the natural processes operating in the deeper areas involved.

(b) Development by EPA of interim dumpsite selection criteria was a prerequisite to the design of any off-the-shelf dumping analysis. Following the issuance of these criteria in May 1973, EPA developed a list of active dumpsites and ranked them in the order in which they should undergo investigation (characterization). This ranking was based primarily on the anticipated urgency of the problems associated with dumping in each site. By the fall of 1973, these priorities were firm. The New York Bight was the highest priority, and our MESA activities were redirected accordingly. Design of the May 1974 survey of the DWD (EPA priority 2) began in January of that year.

(c) In advising EPA on criteria and regulations for dumping and dumpsite selection, NOAA is able to draw upon various earlier studies done by Sea Grant investigators, National Marine Fisheries Service, and others. This is a case of using the best data presently available, acknowledging that considerable more work remains to be done in this area.

(d) NOAA plans to make its recommendations concerning the advisability of off-the-shelf dumping to EPA as rapidly as possible. In the case of the existing shelf sites in the New York Bight, our recommendations will be submitted in late summer of this year. In the case of the deepwater dumpsite, our conclusions will be ready by June 1975.

With respect to advice concerning the use of locations beyond the continental shelf, we will so recommend as and if the specific situation warrants such use. In the case where existing near-shore sites appear to show no significant impact, and moving the dumpsites to deeper areas would prove more difficult to monitor, such translocation may not be called for. In other cases, it may. This must be approached on a case-by-case basis, making certain that a thorough analysis of deeper areas is undertaken before making decisions to dump in those areas.

Question 3. Section 203 calls for the Secretary of Commerce to conduct and encourage, cooperate with, and render financial assistance to public and private agencies for the purpose of determining means of minimizing or ending all ocean dumping within five years of the effective date of the Act. We are now almost halfway to that Congressional target date. (a) Is our scientific and technical know-how anywhere near the point that we can hope to eliminate all ocean dumping of materials within even ten years? (b) What is the state of technology of sewage sludge reclamation or enrichment? (c) NOAA will admit that very little is really known about the long-term impact of ocean dumping. With the central importance of the ocean in man's continued existence, does NOAA feel it is imprudent, if not unwise to continue dumping until those impacts have been fully assessed?

Answer 3. (a) The cessation of ocean dumping depends on the availability of alternative methods of disposal and the economic and environmental costs associated with each alternative. The EPA is supporting many studies that are designed to enhance our technological capability in this area and we defer to that agency for the definitive answer to this question.

There are three basic alternatives to ocean dumping. These are: (1) disposal on land; (2) recycling; and (3) treatment. Land disposal problems include: (1) high costs, especially in metropolitan areas; (2) transportation costs; and (3) frequent citizen opposition. Recycling and new treatment processes are receiving much research attention. The technology presently exists to recycle or treat practically any waste now being disposed of at sea. However, the application of many of these new techniques on a plant scale and at reasonable cost is problematical at best. The cost differences between dumping and alternatives such as reverse osmosis, electrodialysis, activated carbon processes, flash-drying incineration, etc., are right now too great and the environmental effects of continued ocean dumping are still too unclear to justify a decision to require industries and municipalities (and ultimately the citizenry at large) to assume the substantial cost burdens which would result from a complete prohibition against ocean dumping. In addition, the passing of the era of low-cost energy has imposed another serious limiting factor on the development of economically reasonable alternatives to ocean dumping. Sophisticated recycling and treatment processes require large amounts of energy.

An even more intractable problem is the disposal of dredge spoil which constitutes over 80 percent of the tonnage being dumped annually in U.S. coastal waters. The alternatives to ocean disposal of dredge spoil are currently being explored by the Corps of Engineers.

In summary, we believe it is technically possible to eliminate the ocean disposal of sewage sludge and other non-dredge spoil wastes within a ten-year period after the effective date of the act. Whether or not we will apply this technology depends on our assessment of the costs which continued dumping of these wastes will impose on the marine environment and whether we want to bear those environmental costs. As for the technical feasibility of reducing or eliminating ocean disposal of dredge spoil material, we would defer to the Corps of Engineers.

(b) Acceptable methods of treatment, utilization and disposal of municipal sewage sludge are available for use today. The principal methods most widely used include: (1) application to the land (60%); (2) incineration (25%); and (3)

ocean dumping (15%). In terms of volume, there should be no major problem in absorbing the 15 percent of the Nation's sludge currently being dumped in the ocean. There are, however, environmental factors that place constraints on available methods.

There are unresolved issues relative to land application. Leachate from landfills can contaminate surface and groundwaters. Health effects of land spreading, whether the land is used for agricultural purposes or not, is a current major issue. Nitrate contamination of groundwater; contaminated runoff to surface waters; impact of virus, bacteria, spores, intestinal parasites is largely unknown, particularly when food crops are involved; and extent of impact of trace metals contained in sludge on the human food chain is largely undetermined. Trenching appears viable, but requires further study for resolution of the same issues as for other land application techniques. Socio-economic problems are also impacting use of land application methods.

Incineration is commonly used, but is under criticism now due to issues raised concerning air pollution. Again, trace metals are a potential problem and particulate control is needed. Major metropolitan areas appear to be moving away from incineration because it is an energy-intensive method and air pollution considerations are frequently controlling factors.

Thus, potential alternatives which can be identified at the present time include pyrolysis, wet-oxidation, and co-incineration with municipal solid wastes. Technical studies and demonstration for these alternatives are in the early stages.

(c) NOAA's position is that all ocean dumping that adversely alters or impacts the marine environment should eventually be terminated. A reasonable period of time is required to assess the problem and develop alternatives. This work is now in progress.

Question 4. Title II (sections 201 and 202) calls for the Secretary of Commerce to initiate a comprehensive and continuing program of research and monitoring of the effects of ocean dumping and ocean pollution. (a) What have been the results of this undertaking so far? (b) Has NOAA devoted over 90% of its budget for the purposes of studying the New York Bight? (c) The New York Bight is one of the most intensively used dump areas but no baseline data exist. How does NOAA justify such emphasis on the New York Bight as a comprehensive program? Have comprising financial strictures caused the limited scope of this program?

Answer 4. (a) NOAA's work in conducting programs of monitoring and research into the effects of ocean dumping has led to important findings. Among these are the fact that barged disposal of wastes cannot be considered in the absence of total effluent discharge impacts in given areas; existing sites should not be moved until areas are thoroughly analyzed; the use of off-the-shelf sites must be balanced against the difficulty of monitoring the effects of such use in those deep waters; no evidence of any general shoreward movement of sewage sludge toward Long Island beaches; and identification of the major ecosystem components in the New York region. Analysis of the May 1974 deepwater dumpsite investigation is being completed at this time. During 1975 the MESA project will complete: a summary of pollutant loads entering the New York Bight region from sources other than ocean dumping; a conceptual model of the Bight; and the study of alternate dumpsites (for sewage) sludge and, possibly, for dredge spoil).

With respect to Section 202, NOAA is actively involved in research on overfishing and the effects of marine pollution on marine life. NOAA is also exchanging information concerning its own marine research programs and those of other Federal agencies with those agencies. The purpose of this is to avoid duplication as well as achieve comprehensiveness within the overall Federal effort. Also under Section 202 is offshore development activity such as OCS oil and gas development, superports, etc. NOAA plays an important role in helping the Bureau of Land Management develop adequate environmental assessment studies of potential OCS lease areas. In the Gulf of Alaska, NOAA is responsible for conducting the environmental assessment study.

The programs and other efforts of the Department of Commerce (NOAA) and other Federal agencies to comply with the intent of Section 202 are described in the first and second annual reports to the Congress (copies included in enclosure B).

(b) NOAA has devoted over 90 percent of the MESA budget to the New York Bight project. The other 10 percent of the MESA budget is used for ocean dumping research in regions adjacent to the New York Bight. However, within the context of both Sections 201 and 202, NOAA is directing considerably more of its resources than those of the MESA project to the study of man's impact on the

marine environment. NOAA is also conducting research on the long-term effects of ocean pollution, overfishing, and other man-induced changes to ocean ecosystems. (See enclosed annual report to the Congress.)

(c) NOAA selected the New York Bight area for the initiation of its MESA program because of the severe environmental stresses being placed upon that area, including those from the practice of ocean dumping. Because the Bight is where most of the ocean dumping in this country takes place, it was felt that understanding the effects of dumping upon the Bight ecosystem could make a significant contribution to our Nation's ocean dumping problems. While not all results of the New York Bight project are transferable, it is expected that the experience and findings from this project will materially assist future investigative efforts in other coastal areas.

Question 5. Title III authorizes \$10 million annually, yet no funds were requested of the Congress for FY '73, '74 or '75. (a) Why has the marine sanctuaries program been so inactive? (b) Have legal issues been determined or resolved concerning the designation of marine sanctuaries outside of U.S. territorial waters?

Answer 5. (a) It is true no funds have been requested for the fiscal years 73-75. This does not necessarily indicate inactivity. At the outset NOAA perceived the need, the scope and desirability of the program. However, we were also aware of the extremely broad authority encompassed by the marine sanctuary title. Rather than move rapidly into the program, NOAA has chosen to review analogous Federal, state, and local programs and determine how best to develop and implement the sanctuary title in a consistent and compatible manner.

Accordingly, we awarded a competitive contract to the Virginia Institute of Marine Science to obtain and analyze pertinent information. The workshop report is the outcome of the study. The marine sanctuary staff worked closely with the contractor and thus were able simultaneously to develop proposed guidelines for implementing the program. Final regulations were published in the *Federal Register* June 27, 1974. This effectively established the legal framework for acceptance of nominations.

A number of nominations have been received and have been or are being processed. The checks and balances (such as a requirement for consultation with state and governmental agencies and others) contained in the marine sanctuary title necessitate considerable expenditure of time (up to 14 months) to process a given nomination.

The costs of developing the program and processing nominations have been borne by the administrative budget of the Office of Coastal Zone Management (and its predecessor Office of Coastal Environment) to date. In addition, as the need for different expertise (legal counsel, public affairs, charting and mapping, etc.), has evolved these services have been supplied from existing programs.

This experience indicates that large sums of money may not be necessary to establish some types of sanctuaries. This is not to say that a sanctuary can be established at no cost, but rather that, at least in some instances, the principal expenditures may be primarily for administrative costs, rather than acquisition. In establishing the MONITOR Marine Sanctuary, for instance, existing operational capabilities of a number of organizations were and are being used. The funding sources are the participants' basic appropriations. Surveillance and citation for violations of regulations are being carried out by the Coast Guard.

Issuance of permits for research in the sanctuary will be coordinated by the State of North Carolina for NOAA with each Federal agency reviewing and commenting on the proposals as part of their basic mission. The Navy will handle the curatorial functions as part of their ongoing Naval Historical Program. In essence, no new operational capability was established and no duplication of functions evolved.

We believe that the program can develop and function by making every effort to utilize existing capabilities for the operational requirements of the sanctuaries. Thus, minimal funding will be needed directly under Title III. Once a given agency has taken on a particular role, its base program can be augmented to perform the new function. This should be more cost effective.

(b) All of the legal issues involved in the creation of a marine sanctuary outside the territorial waters of the United States have not been identified. However, certain legal issues have been addressed in connection with the creation of the MONITOR Sanctuary. Legal issues vary depending on the nature of the sanctuary and therefore must be addressed on a case-by-case basis. One major issue, that of jurisdiction, seems to be resolved.

The consensus of those who reviewed and commented on the MONITOR Marine Sanctuary which is about 16 miles offshore, is that activities of U.S.

citizens can be controlled in any given designated sanctuary area. However, the activities of foreign citizens must be controlled by means of an international agreement negotiated by the State Department.

Question 6. EPA and NOAA had come to no final conclusions concerning the movement, identification and source of sludge off the Long Island beaches at the time of the Buckley hearings last summer. (a) Has a consensus been achieved? (b) Have Dr. William Harris's identification procedures been tested and verified? (c) Where does NOAA place the leading edge of the sludge bed and does NOAA believe it is moving? If it is moving, at what rate? (d) There is some information to indicate that sludge is also moving down into the Hudson trench. Has NOAA researched these particular deep water effects of the dumping?

Answer 6. (a) The discussions during the 1974 public hearings sponsored by Senator Buckley centered around assertions of a mass movement of sewage sludge onto the beaches of Long Island. It was further claimed that the source of the "sludge" was known, that the material near the beaches had been identified as being sewage sludge, that the "leading edge" of this mass movement was within 3.5 miles of the beaches and that the measured rate of the movement clearly showed that the sludge bed would be on the beaches in three years. There was consensus by both EPA and NOAA representatives that these assertions could not be substantiated on the basis of data derived by NOAA and EPA from many different applied scientific studies.

On the basis of our data, there is no evidence of massive movement of sewage sludge materials toward Long Island beaches. Instead, we have evidence that millennia of natural discharges and the release of sewage material, including that from 50 years of dumping sewage sludge, have produced a well-established, rather stable distribution of organic-rich muds in the New York Bight. Pockets of mud near the beaches are a common natural occurrence and appear to be mainly of natural origin with, perhaps, small admixtures of material derived from sewage. These patches have almost certainly existed for a long time.

Identification of sewage sludge material in the marine environment is beyond the present state of oceanographic technology, because of the extremely complex nature of sewage sludge. Once sewage material reaches the Bight, certain fractions tend to dissolve, while others remain suspended or find their way to the bottom; all fractions react chemically and biologically with the marine environment. It is possible to identify crudely, some, but not all, of the fractionized and reacted material in the marine environment. A single identifier for sewage materials, including sewage sludge, is, therefore, probably not realistic.

Because of the complex and variable nature of sewage generated at the numerous sewage treatment plants serving the greater New York-New Jersey metropolitan area, sources of sewage and sewage sludge found in the Bight cannot be conclusively separated at this time.

(b) Dr. William Harris's sludge identification procedures have not been published. From his verbal statements, we have attempted to construct heavy metal ratios (from our much more intensive and extensive sediment samplings and analyses) similar to those which form one identification base for Dr. Harris. We have not been able to substantiate any constancy of ratios from the sewage sludge dumpsite area to the Long Island beaches.

(c) Based on our findings to date, it is incorrect to describe present conditions in the sewage sludge dumping area in terms of a "sludge bed" or a "leading edge" of such a bed. We believe that what does exist is a rather stable distribution of organic-rich muds in the Bight, some of which are admixtures of material derived from sewage. A source of some of this sewage may be dumped sewage sludge. In general, we do not believe that this organic-rich material is moving, although temporary resuspension in the water column by the action of storm waves can occur. Possibly, because of storm-wave and current actions, as well as differing settling characteristics of sludge components, isolated mud packets containing sewage sludge material in varying proportions may be found in areas in the proximity of the sewage sludge dumpsite. These findings are not consistent with the concept of a "sludge bed" and mass movement thereof.

(d) The "Hudson trench" or more properly, the Hudson Shelf Valley, is a topographical depression on the continental shelf which leads from the mouth of the Hudson River to the Hudson Canyon. There are indications that material of sewage origin, most likely from the sewage sludge dumpsite, has migrated down the Hudson Shelf Valley a distance roughly one-third the way to the Hudson Canyon. The Hudson Shelf Valley in this area is of the order of 75 meters in depth. Further studies of the Hudson Shelf Valley are planned for FY 1976.

Senator HOLLINGS. The committee will be adjourned.

[Whereupon, at 12:05 p.m., the hearing was adjourned.]

BEST COPY AVAILABLE

ADDITIONAL ARTICLES, LETTERS, AND STATEMENTS

SIERRA CLUB, FLORIDA CHAPTER,
Tallahassee, Fla., February 18, 1975.

Mr. JOHN C. BARRETT,
Staff Assistant,
National Ocean Policy Study.

DEAR SIR: With reference to the legislative oversight hearings on the Ocean Dumping Act of 1972, I do have a few comments to make with regard to ocean burning in the Gulf of Mexico. As you must know, the Florida Department of Pollution Control was involved in monitoring recent experimental burning. The conclusion of the DPC staff was that so far as experimental burning went, neither air nor water quality was measurably affected, and therefore no opposition to further experimental burning was made. The Sierra Club is willing to go along with that opinion, which in itself does not go very far. We are, however, very concerned about the use of the Gulf for large, commercial disposal of wastes through ocean burning. Too little is known about current patterns in the Gulf, cumulative effects of chlorinated hydrocarbon component pollutants, synergistic effects, etc. Some sort of rather large scale research program should, in our opinion, be launched and carried to conclusion before any program with that potential for affecting air and water quality, to say nothing of climate change, is permitted *anywhere*.

Sincerely,

ELLEN WINCHESTER,
Vice-Chairman for Conservation.

STATE OF FLORIDA DEPARTMENT OF POLLUTION CONTROL,
Tallahassee, Fla., February 18, 1975.

Mr. JOHN C. BARRETT,
Staff Assistant, Senate Commerce Committee, National Ocean Policy Committee,
Washington, D.C.

DEAR MR. BARRETT: In reviewing our interactions with the EPA Ocean Dumping Program, my attention is drawn to three problem areas.

The first area concerns communications. As an example, our first awareness of the E. I. du Pont de Nemours and Company permit application came through the offices of the press. Since that controversy, we have worked closely with our sister Gulf States and EPA at the staff level and have thereby succeeded in opening communicative pathways. We have made good progress in this area, and we are hopeful of further improvements in time.

The second problem area involves the adequacy of technical review and evaluation of permit applications by EPA. In the du Pont case, the agency accepted testimony by du Pont witnesses who later declared themselves incompetent to give such testimony. Agency technical experts participating in later stages of the du Pont case agreed with Florida's position on all major technical considerations. It seems, therefore, that EPA could have avoided considerable embarrassment and expense had appropriate technical experts been consulted earlier.

The third area of concern is an apparent imbalance in relative levels of concern for the applicants well-being versus that of the environment. In this regard, private citizens have expressed concern that some decisions which should be purely technical may perhaps have been influenced by non-technical considerations.

The Environmental Protection Agency, as an agency of particular public trust and confidence, must take great pains to demonstrate technical competence and unimpeachable integrity in all its actions. The ocean dumping programs seem to be making good progress in this direction.

As a matter of public record, the Florida Department of Pollution Control is opposed to continued ocean dumping in the Gulf of Mexico unless such dumping has been very carefully evaluated on a case by case basis and a thorough environmental impact statement prepared and critiqued. This policy is based on con-

sideration of the semi-enclosed nature of the Gulf and the heavy polluttional load delivered from the Mississippi River and coastal urban centers. Our sister Gulf States share our concern in this matter, and we are confident that EPA will eventually concur.

We have voluminous files on our interactions with the EPA ocean dumping program which are open and available for public examination.

Thank you for this opportunity to comment on this matter.

Sincerely,

PETER P. BALJET,
Executive Director.

NATIONAL WILDLIFE FEDERATION,
Washington, D.C., March 4, 1975.

Col. THOMAS C. HUNTER, Jr.,
District Engineer, Department of the Army,
New York District, Corps of Engineers, New York, N.Y.

DEAR COLONEL HUNTER: The National Wildlife Federation has reviewed public notices issued by the New York District in the period July 1974 to February 1975. For notices involving ocean dumping of dredged material, in both private and Federal projects, we have identified a number of deficiencies in the project descriptions provided. Specifically, the notices fail adequately to describe the polluttional character of the dredged material involved, the nature of the disposal site, and the measures to be taken to minimize environmental impact. We describe these deficiencies more fully in the accompanying Addendum.

Not only do these incomplete public notices violate the requirements of the Corps' own regulations and the EPA ocean dumping criteria, but they make meaningful public participation as required by statute, impossible. As the Court noted recently in the case of *Save Our Sound Fisheries Assn. v. Calloway*, "[w]ithout public notice to all interested parties, and without public circulation of the details of the proposed activity . . . , meaningful and orderly public input into the permit procedure is lost."

Please let us know by March 21, 1975 what steps you plan to take to correct your public notice procedures.

Very truly yours,

KENNETH S. KAMLET,
Counsel.

PAT XELLER
Legal Assistant.

ADDENDUM

(Deficiencies in New York District Office, Corps of Engineers, Public Notices Involving Ocean Dumping of Dredged Materials)

1. Public notices of proposed Federal and private projects which involve disposal of dredged material in ocean waters are required by Army Corps of Engineers Regulations (39 Fed. 26635) (39 Fed. Reg. 12115) and by the Marine Protection, Research and Sanctuaries Act (33 U.S.C. § 1413).

These notices must, at minimum, include the following information:

(a) a description of the type, composition, and quantity of materials to be disposed of and the proposed means of conveyance;

(b) a plan or drawing showing the general and specific location of all proposed disposal sites, the water depth in the area, and whether or not the sites were previously designated by EPA;

(c) a list of other agencies with which the project is being coordinated; and

(d) any other available information which may assist interested parties in evaluating the likely impact of the disposal of the dredged material.

2. Applications for permits for the discharge of dredged materials into ocean waters must be reviewed in accordance with criteria established by the Environmental Protection Agency (38 Fed. Reg. 28620). These criteria require:

(a) a classification of the dredged material as "polluted" or "unpolluted";

(b) careful consideration of the place, time, and conditions of dumping in the case of polluted dredged material; and

(c) appropriate specification in the case of polluted dredged material, of disposal conditions, including selection of disposal sites (on the basis of considerations of benthic life in the area, current patterns, and proximity to productive fishing or nursery areas) and dumping conditions (on the basis of considerations of timing of seasonal reproductive and migratory cycles of aquatic life in the disposal area, the environmental characteristics of the site, the desirability of encouraging or minimizing waste dispersion, and the desired rate and manner of dumping).

On June 4, 1974, a directive concerning the content of public notices was sent by Army Corps of Engineers Headquarters to all coastal districts. In that communication, the districts were instructed, in response to deficiencies previously noted by the National Wildlife Federation, to include the following information in all public notices:

- (a) a complete description of the composition of the materials to be disposed of, including a statement classifying the materials as either polluted or unpolluted;
 - (b) a complete description of the disposal site(s);
 - (c) a complete description of the disposal operations, including the means of conveyance to be used in transporting the material to the disposal site(s);
 - (d) whether or not a disposal site is an approved EPA recommended site;
 - (e) whether or not a site is new or previously used dredged material disposal site; and
 - (f) identification on appropriate sketches of the baseline from which the territorial sea is measured in order to clearly delineate the applicability of FWPCA or MPRSA to the disposal operations and site(s).
4. A review of public notices for Federal projects involving ocean disposal of dredged material reveals the following deficiencies:
- (a) all notices (Public Notice No. 7966, 7961, 7929, 7900, 7898, 7840—Projects 1-17), although they include an analysis of the chemical composition of the dredged material, fail to indicate whether or not pollutional limits had been exceeded and in what respects;
 - (b) all public notices reviewed which involve polluted dredged material (numbers 7966, 7961, 7929, 7900, 7898, 7840—Projects 1-17) fail to provide proposed dumping conditions (e.g., time, place, and rate of dumping) designed to minimize adverse dumping impacts on the marine environment;
 - (c) none of the public notices reviewed (numbers 7966, 7961, 7929, 7900, 7898, 7840—Projects 1-17) indicate the depth of water at or describe the biology, hydrology, geology, or chemistry of the proposed disposal site;
 - (d) two public notices (numbers 7966, 7840—Project 10 [re: disposal in Lower New York Bay]), do not indicate whether or not the disposal site is an EPA-approved site, or whether it is a newly designated site or a previously used one;
 - (e) although final regulations governing Federal dredge disposal projects became effective on July 22, 1974, no public notices were received from the New York District prior to October 2, 1974.
5. A review of public notices for private projects involving ocean disposal of dredged material reveals the following deficiencies:
- (a) In a majority of notices (numbers 7977, 7968, 7957, 7955, 7954, 7950, 7933, 7922, 7903, 7902, 7874, 7857, 7852, 7851, 7842, 7845 and Revision to Public Notice 7046 [1/15/75], although the dredged material is described as "polluted" or "not polluted", there is no adequate description of the chemical composition of dredged material in question.
 - (b) Many public notices (numbers 7946, 7931, 7930, 7878, 7873, 7803, 7798, 7791, 7792) not only fail adequately to describe the chemical composition of the dredged material, but fail even to describe it as "polluted" or "unpolluted".
 - (c) Some public notices (numbers 7791, 7792), do not adequately describe the location of the disposal site(s).
 - (d) No public notice indicates whether or not a disposal site is an EPA-approved site, or whether it is a newly designated site or a previously used one.
 - (e) No public notice indicates the means of conveyance of the dredged material to the disposal site(s).
 - (f) No public notice includes a plan or drawing of the disposal site(s) or any reference to the depth of the water at the disposal site(s).

(g) No public notice includes proposed permit conditions (e.g., specifying the time, place and rate of dumping) designed to minimize adverse dumping impacts on the marine environment.

EXHIBIT I. LIST OF PUBLIC NOTICES INVOLVING OCEAN DISPOSAL OF DREDGED MATERIAL

Public notice No.	Date	Applicant
Private projects:		
1. 7791.....	July 18, 1974	Consolidated Edison Co. of New York.
2. 7792.....	do.....	Do.
3. 7798.....	July 23, 1974	Do.
4. 7803.....	Sept. 20, 1974	Rodermond Industries, Inc.
5. 7842.....	Sept. 23, 1974	Lever Bros. Co.
6. 7845.....	Sept. 20, 1974	Transocean Gateway Corp.
7. 7851.....	Sept. 27, 1974	C.P.C. International, Inc.
8. 7852.....	do.....	Celanese Chemical Co.
9. 7857.....	Oct. 3, 1974	Public Service Electric & Gas Co.
10. 7873.....	Nov. 1, 1974	Diamond Shamrock.
11. 7874.....	do.....	Public Service Electric & Gas Co.
12. 7878.....	Nov. 6, 1974	Long Island Lighting Co.
13. 7902.....	Nov. 15, 1974	The city of New York, Department of Ports and Terminals.
14. 7903.....	do.....	Columbia Asphalt Corp.
15. 7922.....	Dec. 5, 1974	Amerada Hess Corp.
16. 7930.....	Dec. 12, 1974	Public Service Gas & Electric Co.
17. 7931.....	do.....	Do.
18. 7933.....	Dec. 16, 1974	The city of New York Department of Sanitation.
19. 7946.....	Jan. 9, 1975	Second Reserve Terminal, Inc.
20. 7950.....	do.....	Consolidated Edison Co. of New York, Inc.
21. 7954.....	do.....	Exxon Co., U.S.A.
22. 7955.....	do.....	The Port Authority of New York and New Jersey.
23. 7957.....	do.....	Do.
24. 7968.....	Jan. 29, 1975	Do.
25. 7977.....	do.....	Do.
Federal projects:		
1. 7840.....	Oct. 2, 1974	Projects 1 to 7.
2. 7898.....	Nov. 12, 1974	Elizabeth River flood control project.
3. 7900.....	Nov. 14, 1974	Dredge Brown Creek, Great South Bay, Sayville, Suffolk County, N.Y.
4. 7929.....	Dec. 20, 1974	Dredge Lake Montauk Harbor and Block Island Sound.
5. 7961.....	Jan. 10, 1975	Elizabeth River flood control project.
6. 7966.....	Jan. 23, 1975	Dredge New York Harbor at U.S. Army Caven Point terminal.

**NATIONAL WILDLIFE FEDERATION,
Washington, D.C., March 12, 1975.**

Mr. T. A. WASTLER (WH-448),
Chief, Marine Protection Branch,
U.S. Environmental Protection Agency,
Central Mall, Washington, D.C.

DEAR MR. WASTLER: The National Wildlife Federation has reviewed the most recent draft revisions to the EPA ocean dumping criteria (40 C.F.R. Part 227). Not only do we find it no great improvement on the previous draft (on which we submitted comments dated January 24, 1975), but in several respects it reverts to prior inadequacies and even creates new ones.

There comes a point when further repetition of the same unanswered contentions becomes tiresome, frustrating and counterproductive. This is particularly the case where, as in this instance, our comments, suggestions, and criticisms have been variously adopted, rejected, or ignored (and in some cases, adopted in one draft and rejected in the next) without explanation or justification. While we do not expect EPA's uncritical acceptance of our every recommendation (we have attempted to justify all our recommendations—often in great detail), we would at least (as a matter of courtesy, if nothing else) appreciate an explanation (however brief) of why our various arguments and entreaties have all too often fallen on deaf ears.

We have attempted to work cooperatively with EPA to strengthen its ocean dumping program and we have resisted in related instances the strong temptation to seek judicial resolution of sometimes blatant neglect by EPA of its legal obligations. We have observed, however, that the threat of legal action sometimes

has had an appeal to EPA that simple law and logic have not. It is a recourse we may yet seek in this instance.

There is still an alternative to legal action, however. We would propose a meeting (for which 3-4 hours have been set aside) between a representative of NWF and representatives of EPA (preferably yourself and Jim Rogers) to identify, and if possible narrow, our areas of major disagreement (at least in the "criteria"). This would be followed by a 1-day meeting of a small group (e.g., about a dozen) of marine scientists either jointly agreed to by NWF and EPA or half selected by EPA and half by NWF. These scientists will have been provided in advance with written statements of the respective positions of NWF and EPA on the controverted major issues (again limited to the ocean dumping "criteria"), and their mandate would be to evaluate the technical merits of these positions and to recommend a satisfactory resolution. This meeting could be noticed in the Federal Register as a meeting of EPA technical consultants, with a transcript kept of the participants' deliberations and public attendance invited (with, however, active participation limited to the submission of written comments)—all this in conformity with procedures under the Federal Advisory Committee Act (although this group of consultants would probably not be considered an advisory committee within the meaning of the Act).

Not only would this approach forestall litigation and help resolve complex technical questions which have been raised and reraised repeatedly for the last year or more, but it would greatly improve EPA's posture in upcoming Congressional oversight hearings and in the already-underway General Accounting Office investigation of EPA's ocean dumping program performance.

We would appreciate the favor of an early response to this proposal for resolving our substantive differences.

In the meantime, for what it is worth, we have taken the trouble of preparing still another set of comments on the latest draft ocean dumping criteria (Part 227), a copy of which is attached hereto.

Sincerely,

KENNETH S. KAMLET,
Counsel.

NICHOLLS STATE UNIVERSITY,
COLLEGE OF LIFE SCIENCES & TECHNOLOGY,
Thibodaux, La., March 10, 1975.

Senator WARREN G. MAGNUSON,
Chairman, Committee on Commerce,
U.S. Senate,
Washington, D.C.

DEAR SENATOR MAGNUSON: Your letter of 2/21/75 concerning results of our research in the Gulf of Mexico is sincerely appreciated, and is an indication to us as to the significance of our efforts. Your letter of interest and concern about marine pollution in the Gulf of Mexico is among the first expressed by a national figure, and I hope its results will lead to national recognition of what I believe to be a matter of chronic and growing marine environmental degradation.

We discovered an area in May of 1973 immediately west of the mouth of the Mississippi River that was oxygen deficient in the bottom waters to the extent that it would not support shrimp, fish, crabs, or other forms of aerobic benthic organisms. I am enclosing a map of the effected area and a chart that shows the thickness of anoxic water as it existed during July of 1973. The total water column has been monitored on a monthly basis for chemical, physical, and biological parameters from May of 1973 until the present. The initial phase of the project as funded by LOOP, INC., a private consortium of oil companies hoping to build a superport off the Louisiana Coast. Since September of 1974 we have been attempting to determine the cause of eutrophication and its effect on commercial and sport fishing in the effected area. The present study is being funded as a Sea-Grant Project award.

In response to your specific questions, I will try to answer them point by point.

Before I answer these questions I must state that we have no information that would link the specific acts of ocean dumping with eutrophication in the Gulf of Mexico, however, many pollutants have the same effect on the total marine environment whether they trickle into a river 500 miles above its discharge, or are transported to the ocean on a barge. In effect, we have constant ocean dumping from continental runoff, industrial and domestic pollution of inland waters, and their ultimate discharge from our river systems.

Question 1.

Answer. The area immediately west of the mouth of the Mississippi River has been the only area that we have been physically and financially able to study. We do not know if similar conditions exist south or east of the river. We have a newly constructed marine laboratory adjacent to the Gulf in the vicinity of the low oxygen conditions, and I am presently monitoring this area with my personal 28' boat on cruises of 1 day's duration. Neither Nicholls State University nor the State of Louisiana possess a boat capable of conducting marine research. Low oxygen conditions have existed in more estuarine locations along the Gulf Coast in past years and have been reported inside Mobile Bay by Edwin May 1973 in *Limnology and Oceanography*, Vol. 18. There is also occasionally a phenomena called a fish "jubilee" that occurs in Mississippi sound caused by low oxygen conditions forcing the fish up on the beach. So far as I know, there are no other oxygen deficient marine areas in the Gulf other than the area we discovered.

Question 2.

Answer. The time required for this area to return to a normal productive area was recorded in the fall of 1974. Low oxygen was chronic in most of the area shown in red on the accompanying map from May 1973 through September of 1974, a period of 17 months. Discharge from the Mississippi River was much above normal throughout this period. During September of 1974, Hurricane Carmen centered and stalled for nearly 24 hours over the anoxic area. Surface and bottom waters were well mixed inside the 100' depth contour. The Mississippi River discharge was the lowest in almost 2 years. During October and November, anoxic conditions disappeared and normal populations of benthic organisms and nekton re-established themselves in bottom waters. In mid-February of 1975, anoxic conditions began to reappear, and we recorded zero oxygen readings in several locations. This indicates the condition is chronic and can probably be expected to occur to some degree during each high river stage of the Mississippi.

Question 3.

Answer. The cause of eutrophication in the Gulf is apparently the result of many identifiable and unidentifiable factors acting together and perhaps uniquely to produce a profound effect on the marine environment. Known factors are listed in order.

A. The Mississippi River drains approximately $\frac{1}{2}$ the land mass of the continental U.S. of America.

B. The Mississippi River has levees throughout its flood plains all the way to its discharge passes in the Gulf of Mexico. The majority of the river discharge enters the Gulf through south-west pass. Flood waters that historically overflowed the levees of the Mississippi River and flowed as a broad sheet over the deltaic flood plains, depositing its silt and organic loads as it passed, are now introduced into the Gulf at one point.

C. The Mississippi delta near the passes juts out into the Gulf in the shape of a mushroom, making a semi-enclosure of the Gulf in the area northwest of south-west pass. This geographic configuration of the coastline has interrupted normal littoral currents, and created an eddying effect in the oceanic currents in the area.

D. The fresh-water discharge from south-west pass flows north and west in response to prevailing marine currents and wind. This fresh water mixes slowly with the marine waters it encounters, and because of its low density as compared with marine water, it spreads like a sheet over the Gulf north and west of the river mouth. A distinct stratification of marine waters occurs in the study area, with low salinity, highly turbid waters near the surface, and warmer high salinity waters on the bottom. The eddying effect of marine currents within the semi-enclosure complements a continued stratification during periods of high river discharge.

E. The Mississippi River waters are highly charged with detritus, dissolved organics, and nutrients. As the river water loses its velocity while spreading across the surface of the Gulf, these materials either settle to the bottom, or furnish the nutrients to produce a continual plankton bloom in the upper waters. Turbidity of surface waters is maintained by plankton blooms for long distances from the mouth of the river, and sunlight is blocked from bottom waters, preventing photosynthesis. The highly organic fallout from surface waters has built up bottom muds with Biological Oxygen Demands (BOD) equivalent to that of raw domestic sewerage. Any oxygen present in the high salinity bottom water is rapidly depleted by bacterial decomposition of organic material. Oxygen replenishment

is apparently prevented by stratification and non-mixing with surface waters and by a lack of photosynthesis. Highly stratified conditions often exist in waters as shallow as 25' and continues offshore to beyond the 100' curve.

Question 4.

Answer. My predictions for a poor shrimp crop for 1974 were restricted to estuarine areas immediately inshore of the "dead" water area. It so happened that the prediction proved true for the entire state; however, the catch within the estuarine area inshore of the dead water area was much below the average for the state, and was highly responsible for bringing the state average down. The Louisiana shrimp catch for 1973 and 1974 was approximately 37 million pounds, heads-off weight for each year. The previous ten year average was approximately 46 million pounds, heads-off weight. While we have no evidence that ocean dumping leads to the decrease in shrimp production, some dump sites are in close proximity to off-shore spawning sites, and shrimpers become incensed when they see such actions take place.

Question 5.

Answer. I am familiar with dumping criteria established by EPA and their bioassay procedures. If we must continue to dump, I believe the dumping criteria, when properly enforced, are sufficient to minimize harm, however, I do not believe the bioassay procedures are adequate to determine the harm that ocean dumping may or may not cause.

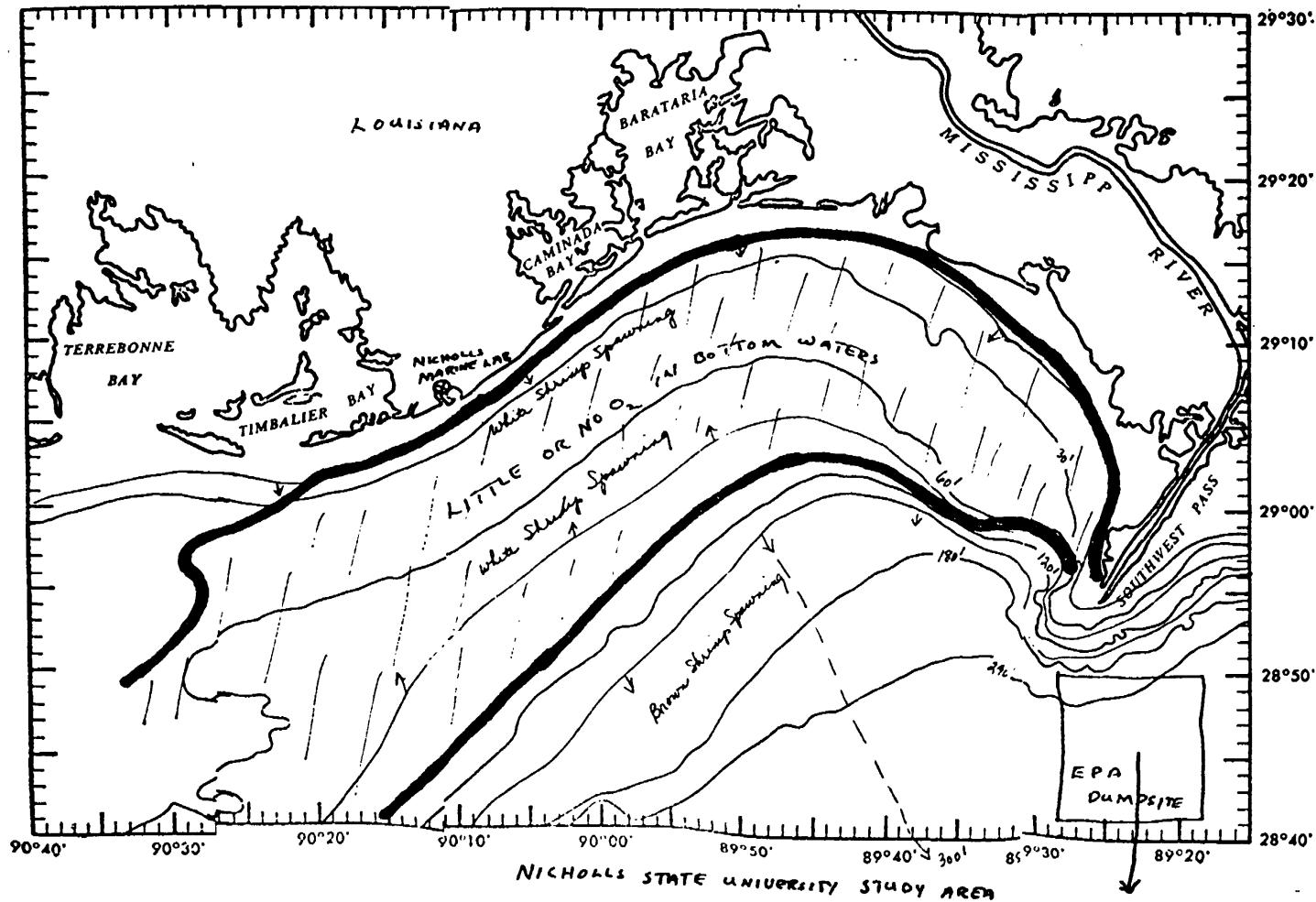
The methods used will not detect the cumulative effects of long term pollution, and serve only to detect the possible instantaneous and localized results of one act of pollution. I believe that the only meaningful way to determine the effects of ocean dumping, or any other type of marine pollution, is to establish baseline levels of materials that we consider to be pollutants in the water column, sediments, and the included living organisms, and to constantly monitor these parameters for change. This practice is being carried out in air pollution studies, has begun in many fresh water bodies, and has reached the point of necessity for the marine environment.

It has been an honor to respond to your request, and I hope this information may be of value to your proceedings. We look forward to your continued support and interest in our studies on marine pollution.

Sincerely,

ALVA H. HARRIS,
Professor of Biological Sciences
Director, N.S.U. Marine Science Laboratory.

WCS and Nicholls



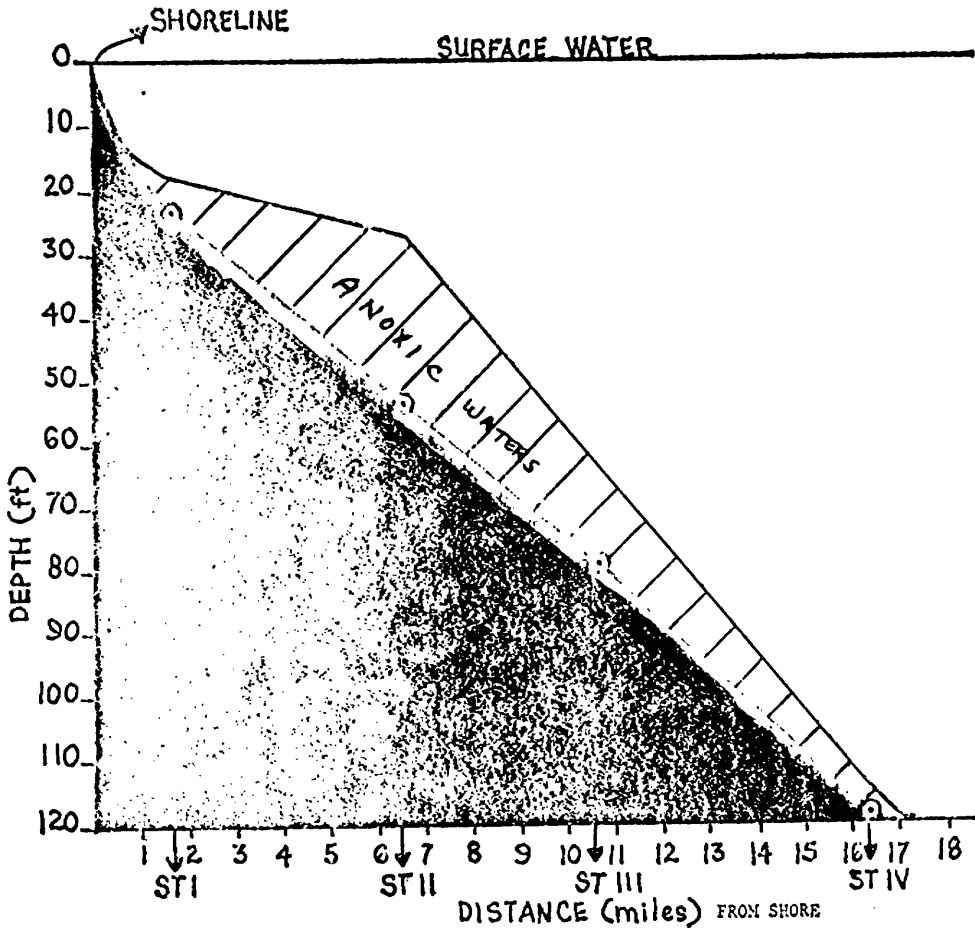


FIGURE 5.1.5.—Location and vertical height of anoxic bottom waters during July 1973.

BROOKLYN COLLEGE,
DEPARTMENT OF GEOLOGY,
Brooklyn, N.Y., March 11, 1975.

Senator WARREN G. MAGNUSON,
Chairman, U.S. Senate,
Committee on Commerce,
Washington, D.C.

DEAR SENATOR MAGNUSON: To answer your particular questions:

1. EPA contacted me in Sept. 1974, expressing a desire for me to accompany them on their vessel so as to show them those areas where our results have led us to our conclusions re: threat of sludge movements; the possibility of EPA personnel accompanying CUNY-Institute of Oceanography cruises to the areas we monitor, and the possibility of exchanging sample cuts from separate EPA/CUNY cruises or of quality control analysis on the same samples. My group took part in the EPA cruise of 21 Oct. 1974, and we tried again in Nov. but were forced to abort because of rough weather. Invitations to EPA to take part in CUNY cruises in Dec. 1974 were made but not accepted. EPA has furnished us with analytical results from the Oct. EPA cruise. Their results support in part our findings.

2. We have continued our studies with cruises on Aug. 16, 1974 aboard the "Marlin" (private owner) utilizing SCUBA substrate monitoring; utilized the EPA cruise on 21 Oct. 1974 for our own studies; and on Dec. 15, 1974 aboard the CUNY R/V Commonwealth. These follow-up studies since our July 9-10 cruise which preceded the Aug. 2d hearing showed:

(a) little movement from the position attained by the peripheral zone of the offshore Christiansen Basin sludge bed in July, i.e., 3 to 3.5 nautical miles south of Atlantic Beach, N. Y. We are expecting a resumption of shoreward movement associated with northeasters this Spring and will be monitoring in April and May, 1975, as well as July, Sept. and Oct. 1975. For all practical purposes the sludge bed has remained within 3 to 3.5 naut. mi. of the beach since July, 1974.

(b) Sludge within 1 nautical mile of Long Island beaches which as of July continuously covered considerable areas (3mi E-W x 1½ mi N-S off Lido Beach-Long Beach and ¾ mi E-W x 1 mi off Atlantic Beach) resumed the characteristic trough fill patchy distribution characteristic of Fall-Winter, but is expected to expand during Spring-Summer. Metal ratios have shown the material off Lido Beach-Long Beach to be derived from Hempstead Bay in contrast to the Atlantic Beach materials being derived from the offshore sludge bed.

3. Cmdr. Swanson of NOAA, Mr. Dowling of EPA and Mr. Doheny of Town of Hempstead Dept. of Conservation & Waterways have contradicted my conclusions of last summer, but data as interpreted by me including our previous results continue to support my original conclusions. In contrast to NOAA and EPA, metal ratios do show the origin of Atlantic Beach sludge patches as being the offshore disposal site. In contrast to Mr. Doheny, only the Lido Beach materials have been derived from the Bay. My conclusions have been supported by Dr. Jack Forenbach of the N.Y.S. Dept. of Environmental Conservation who has used gas chromatography thereby obtaining a multiple "fingerprint" of pesticides, PCB's and hydrocarbons. Pat Hatcher's carbohydrate/TOC ratio (NOAA-AMOL) also supports our conclusions as to the origin of the inshore sludge patches. Examination of the Sandy Hook Mar. Fisheries Summary Rept. (1972) maps showing the peripheral zone position as of 1970 when compared to our data of the present position or even to NOAA's shows the same ca. 1/mi per year average rate of movement.

4. The movement of the sludge shoreward is only due to the introduction of new deposits during the period of the seasonal thermocline from about June through Sept. when the density stratification allows little of the sludge dumped to settle at the dump sites. Prevailing currents transport this suspended sludge into inshore areas to accumulate nearshore. The expansion of the offshore sludge bed is confined for the most part to its northwest lobe. This sludge bed in the Christiansen Basin receives sludge from the disposal site to the east by bottom currents. It is the shift of sludge already dumped which is resulting in the expansion northward towards the beaches of the main sludge bed each Spring. The shoreward movement probably would not be stopped by a cessation of dumping.

5. Deleterious effects of sludge on humans and marine ecosystems aside from esthetics will soon if not already include:

(a) a health hazard due to present bubble cavitation transport of pathogens to the air over the dump site during dumping operations including TB and pneumonia and possibly meningitis and hepatitis; extension of this effect to the shore zone within 2 years maximum under present rates of sludge bed expansion.

(b) contamination of shellfish with toxic and enzyme active heavy metals presumed to be occurring but unknown in this area. Sludge disposal area off Maryland only active 13 years and already shows 2x to 3x above background in clams and scallops.

(c) probable health hazard under proper conditions from sludge-tar balls on beaches.

6. Would presume sludge would not be in contact with open air in strip mine fill but would be alternated with sand layers just as garbage is in sanitary land fills. Answer to the sludge problem is already here; i.e. incineration, incineration to produce electric power when mixed with other combustible solid waste; fertilizer production. The technology is here, but with our sludge it would produce environmental problems due to heavy metal contamination of our air, crops and ground water reserves. All we need to do is recycle the sludge first to extract the heavy metals and then we could go ahead with any of the above land-based alternatives.

7. I do not have a proprietary interest in heavy metal ratios as a method of sludge fingerprinting. It in part has been tested by NOAA but in my opinion they don't do it with the proper pairs in the proper way. The College of Marine Studies, Univ. of Delaware is using Ag/Zn to trace sludge off the Maryland coast from the Philadelphia-Camden sludge disposal site.

8. EPA is an enigma to me. Any agency that both makes policy decisions and purports to assess scientific data to arrive at these decisions is suspect just as was the AEC. Consequently although I have found them cooperative, I have not found them to be receptive to my studies or findings. Their 1 transect off Long Island is inadequate to monitor the area; in addition, even this one transect has too few stations for adequate control.

Both the EPA and NOAA examine only the uppermost part of a sample for heavy metals; often this is the oxidized zone. Our sample is a channel sample examining the entire vertical section caught by the sampler and not just the uppermost layers; if the uppermost layers are oxidized they are discarded. The difference in sampling technique may be one of several factors which preclude agreement by NOAA or EPA with my conclusions. We intend to expand our "fingerprint" base as of July, 1975 to include ratios of selected hydrocarbons, pesticide residues and PCB's. The results of our studies from July, 1970 through May, 1975 (monthly Dec. 1974—July, 1975) including our two new research techniques of age dating inshore sludge accumulations using age classes of benthic invertebrates and of fingerprinting the origin of sludge deposits using heavy metals ratios are being worked up for publication in a scientific journal, later this Spring.

I will gladly continue to furnish my data to NOAA and respond to your committee's questions.

Sincerely yours,

WILLIAM H. HARRIS,
*Marine Sciences Research Group,
 Assistant Professor, Chemical Oceanography & Environmental Geochemistry.*

WOODS HOLE OCEANOGRAPHIC INSTITUTION,
 Woods Hole, Mass., April 10, 1975.

HON. WARREN G. MAGNUSON,
*Chairman, Senate Commerce Committee,
 Washington, D.C.*

DEAR SENATOR MAGNUSON: It has come to our attention that the Committee on Commerce, Sub-committee on the Oceans and the Atmosphere will hold hearings on the Marine Protection, Research and Sanctuaries Act of 1972, (PL 92-532) (33 USC 1401-1444), with emphases on portions of the Act, dealing with Ocean Dumping. The Marine Policy Group of the Woods Hole Oceanographic Institution is currently engaged in an interdisciplinary study of the projected impacts upon the domestic fishing industry of the New England and Middle Atlantic State of proposed Outer Continental Shelf oil drilling.

A workshop held at Woods Hole on 12-13 March 1975, attended by representatives of both industries, identified as a major area of potential conflict the issue of gear damage caused by foreign objects disposed of by oil company and sub-contractor personnel (supply boat operators, platform and drilling rig crews) from service and supply vessels, drilling rigs and production platforms. Reports from fishermen in areas of offshore oil operations such as Santa Barbara Channel, Gulf of Mexico, and the North Sea have confirmed such damage from the dumping of debris.

Ocean dumping of the kind resulting in disruption to fishing operations and damage to gear may only be prevented through enforcement of the Rivers and Harbors Act of 1899 (33 USC & 407) which prohibits dumping of all refuse, including oil drums, wire, etc. within navigable waters out to the limits of the territorial sea (three miles) and by the Ocean Dumping Act (which prohibits dumping of any kind into navigable and ocean waters without a permit granted by the Environmental Protection Agency (EPA) Regional Supervisor). Surveillance is assigned to the U.S. Coast Guard, who report violations to the Regional EPA office for enforcement. It is our understanding that both the Coast Guard and EPA have no full-time enforcement staffs to prosecute violations of the Act and that their respective appropriations are insufficient to accomplish the legislative mandate of the Act. The Act's definition of "ocean waters" (1402(b)) includes only the territorial and the contiguous zone out to a limit of twelve (12) miles, but east coast drilling will take place at a minimum of twenty (20) miles from the coast. Yet the EPA is asserting jurisdictional responsibility under section 402 of the (Federal Water Pollution Control Act (FWPCA) (33 USC 1342), within the broader jurisdictional limits of that act, over all offshore drilling activity regardless of distance from the coast. Clearly the Act should be amended

to coincide with S402 jurisdictional control the FWPCA, and possible extension of section 3 of the FWPCA responsibility for oil spills to the OCS as well. Extension of jurisdiction will require additional appropriations and manpower to provide for increased surveillance and enforcement under the Act or Acts.

The United States Geological Survey (USGS) has not treated the problems of jettisoned gear from whatever source in its OCS orders or other regulations. The one exception is OCS order #3-1 which requires a lessee when *permanently* abandoning and when abandoning a lease site to clean the seabed to cut off all well stumps below the seabed to prevent interference with fishing (43 CFR 3307.3-6).

We would like to have these comments included in the record of your hearings and hope that they will be useful to the Committee, the EPA and Coast Guard in their Ocean Dumping program.

Sincerely,

LAWRENCE MALLON,
Marine Policy & Ocean Management.

DEPARTMENT OF THE ARMY,
OFFICE OF THE CHIEF OF ENGINEERS,
Washington, D.C., May 30, 1975.

Hon. ERNEST F. HOLLINGS,
*Chairman, Subcommittee on Oceans and Atmosphere,
U.S. Senate,
Washington, D.C.*

DEAR MR. CHAIRMAN: This is in response to your letter of 21 May 1975 to LTG Gribble concerning the Corps' implementation of the Marine Protection, Research and Sanctuaries Act. The following answers to your questions are provided. It is understood that you intend to insert them in the official record of the hearings:

Question 1. Have the dredged material disposal criteria caused any delays in Federal dredging projects? If so, have these been isolated local delays or a general national delay of the overall dredging program?

Answer. Up to the present the Corps has not experienced any unacceptable delays due to the criteria. Some Federal dredging projects have, however, been seriously delayed due to litigation involving environmental concerns. I will cite three examples:

(1) The maintenance dredging of New Haven Harbor main channel was delayed for one year by court injunction on the finding that an impact statement was not available prior to award of contract. The Corps argued that there was no identifiable significant or adverse impact and that CEQ policy guidance allowed this as an ongoing maintenance project. Added cost of dredging was \$172,800.

(2) Channel improvement of Providence River to 40-foot depth was halted by injunction after 99 percent of 20 million dollar project was completed and more than nine million yards were dumped at sea. Action was brought by fishermen to restrain use of the same dump for the remaining 100,000 cubic yards, mostly rock, to complete the project. An injunction was granted on the basis that no hearing had been conducted as required by Section 103 despite a Corps plea that this was a continuing project. The delay was 19 months and added costs are estimated in excess of \$500,000 for dredging.

(3) The U.S. Navy, Corps, and EPA were joint defendants in an action brought by environmental groups over issuance by the Corps of a permit to dredge New London Harbor for the SSN688 class submarine, and to dump in approved ground in Long Island Sound. The Court found for the agencies against enjoining the work. Fully 2 years of coordination between the agencies and the public preceded the decision and about \$100,000 in preliminary studies was spent. An additional \$500,000 is being spent by the Navy to monitor work in progress.

Question 2. Have any delays resulting from the criteris established under this Act created any actual impariments to navigation and commerce?

Answer. None sir. Recent impariments to inland navigation, specifically the Southwest Pass of the Mississippi, has been the result of excessive run-off and funding problems vice the criteria.

During the 20 May 1975 Oversight Hearings you requested of BG McIntyre to submit any suggested changes to the Act which the Corps felt appropriate. Having carefully reviewed the Act and its implementation to date we offer no recommended changes at this time.

On behalf of the Chief of Engineers I thank you for the opportunity to provide comment regarding this important Act. Please contact me if I may be of any further assistance.

Sincerely,

J. W. MORRIS,
Major General, USA, Director of Civil Works.

DEPARTMENT OF COMMERCE,
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION,
Rockville, Md., June 18, 1975.

Hon. ERNEST F. HOLLINGS,
U.S. Senate,
Washington, D.C.

DEAR SENATOR HOLLINGS: The enclosed material is in response to your letter of May 21, 1975, requesting additional information on this agency's implementation of the Marine Protection, Research, and Sanctuaries Act.

Sincerely,

ROBERT M. WHITE,
Administrator.

Enclosure.

1. *In carrying out its research function under Sec. 201, does NOAA place equal emphasis on studying the effects of materials disposed of through ocean outfalls as well as by materials that are actually dumped?*

Section 3(f) of the Marine Protection, Research, and Sanctuaries Act specifically excludes from the definition of ocean dumping the disposition of effluent from any outfall structure to the extent such disposition is regulated under the provisions of the Federal Water Pollution Control Act Amendments of 1972 (P.L. 92-500). Outfall discharges are regulated under the National Pollutant Discharge Elimination System established pursuant to Section 402 of the FWPCA. Accordingly, NOAA has taken the position that the Section 3(f) exclusion applies with equal force to Section 201, and that EPA exercises full responsibility for both regulation and the conduct of necessary research on the effects of effluent discharged through ocean outfalls.

Nevertheless, NOAA has a responsibility under Section 202 of the Act for conducting or sponsoring research programs to examine the long-range effects of ocean pollution without regard to the source(s) of such pollution. For example, the NOAA MESA Project in the New York Bight has recently conducted under contract an inventory of non-dumped pollutants and the sources thereof.

2. *What have been NOAA's activities in carrying out Sec. 203?*

Section 203 of the Act calls for the Secretary of Commerce to conduct and encourage, cooperate with, and render financial assistance to public and private agencies for the purpose of determining means of minimizing or ending all ocean dumping within five years of the effective date of the Act.

The reduction or cessation of ocean dumping depends on the availability of alternative methods of disposal and the economic and environmental costs associated with these alternatives. Research and development activities directed toward improved, less wasteful, industrial processes should result in diminished volumes of residuals requiring transport and disposal. The same is true with respect to municipal wastes. In short, technological factors that result in a reduction of waste materials now dumped in our coastal waters will contribute to a decrease or possible elimination of ocean waste disposal.

In our judgment, the principal scientific and technical expertise for development of these alternatives is located within the Environmental Protection Agency and the Corps of Engineers. Both agencies have active programs underway in this area. These agencies also have the capability to implement these alternatives through regulatory activities and through such programs as EPA's grants for municipal wastewater treatment plants. We believe that building similar capabilities in the Department of Commerce for studying alternative waste disposal methods to ocean dumping would be duplicative of existing Federal programs. Thus, the

Department of Commerce, through NOAA, has placed first priority in implementing Section 201 of the Act—studies to determine the environmental effects of ocean dumping.

We recognize the importance of Section 203 as an essential element toward eventual elimination of off-shore dumping. NOAA expects to play an increasingly active role in coordinating programs related to the objectives of Section 203 as those programs of EPA and the Corps of Engineers mature and yield results. We have already initiated coordinative action with these agencies.

3. Is there disagreement between EPA and NOAA concerning the relative safety of the present New York sludge dumpsite?

There is general agreement between the two agencies that the sewage sludge dumpsite does not at present constitute a threat to public health or to the adjacent beaches. The NOAA MESA Project has determined that a homogeneous sludge mass or "sludge bed" as such does not exist in the Bight. Instead, we have evidence that thousands of years of natural sediment discharge and the release of sewage material from both shoreline outfalls and 50 years of barge dumping have combined to produce a well-established, rather stable distribution of organic-rich muds in the New York Bight. Pockets of mud near the beaches are a common natural occurrence and appear to be mainly of natural origin with, perhaps, small admixtures of material derived from sewage. These patches have almost certainly existed for a long time. In general, we do not believe that this organic-rich material is moving, although temporary resuspension in the water column by the action of storm waves can occur. Possibly, because of storm-wave and current actions, as well as differing settling characteristics of sludge components, isolated mud packets containing sewage sludge material in varying proportions may be found in areas in the proximity of the sewage sludge dumpsite. These findings are not consistent with the concept of a "sludge bed" and mass movement thereof.

The EPA decision to relocate the sewage sludge dumpsite in 1976 was based more on evidence that the site has been utilized at or near its capacity rather than out of concern that it constitutes a clear and present danger to human health.

4. What conclusions are available about the effects of deep ocean dumping? Is deep ocean dumping not scientifically prudent or is it not economically feasible for the dumpers?

A major determinant of whether deep-ocean dumping is feasible or not is the environmental impact of such dumping. This must be ascertained on a case-by-case basis with thorough analysis and understanding of the living resources and other natural processes occurring in the deeper areas.

In May 1974, NOAA conducted a baseline investigation of the "Deepwater Dumpsite" located 106 n mi southeast of Ambrose light. This was the first of three seasonal baselines to be obtained in the area. The second, a summer baseline, will be conducted during July/August 1975, and a winter baseline survey is planned for February 1976. NOAA plans to make recommendations to EPA in August of this year concerning the advisability of deep-ocean dumping of sewage sludge at the edge of the New York Bight.

With respect to the effects of deep-ocean dumping, our preliminary findings in the "Deepwater Dumpsite", where industrial chemicals are disposed, indicate the possibility that the wastes disperse in the water column so completely that they do not reach the bottom of the dumpsite area in detectable amounts. Apparently, the wastes are dispersed rapidly and almost completely by complex near-surface and mid-water column currents and circulation patterns. However, we need to complete the seasonal baseline work before these observations can be confirmed.

Our current position regarding deep-ocean dumping is that it may be a scientifically prudent alternative to dumping in more shallow waters, but no final conclusions can be made at this time. With respect to economic feasibility, it appears that the costs in dollars per ton of dumping at the edge of the continental shelf are not prohibitive and may be competitive with the currently available land-based disposal alternatives. Other factors of concern to NOAA are the technical difficulties and the greater costs involved in conducting monitoring operations at deepwater sites.

DEPARTMENT OF TRANSPORTATION,
UNITED STATES COAST GUARD,
Washington, D.C., June 10, 1975.

Hon. ERNEST F. HOLLINGS,
*Chairman, Subcommittee on Oceans and Atmosphere, Committee on Commerce,
U.S. Senate, Washington, D.C.*

DEAR MR. CHAIRMAN: This is in response to your letter of 21 May 1975 which transmitted follow-up questions to the 20 May hearings on the Marine Protection, Research, and Sanctuaries Act of 1972.

Total compliance with an ocean dumping permit by the permittee cannot be determined without sampling of the material to be dumped, with samples drawn from each tank or compartment on the transporting vessel, and possibly at various levels within each compartment.

As we related to Senator Magnuson in our letter of 13 March 1975, personnel safety was a prime factor in our decision not to encourage Coast Guard sampling (unless a violation is suspected or a specific request is received from EPA). Another factor, however, is that we have interpreted our monitoring, surveillance and enforcement responsibilities to primarily encompass the transportation for dumping and the dumping itself.

As a special condition of dumping permits, EPA requires that the permittee or dumper shall have analyzed representative samples from each barge load and "an appropriately composited sample from all barge loads in each 30-day period." Thus, analysis is being conducted, and the results provided to EPA. It appears, however, that a weakness may exist in that the sampling can be conducted with no direct federal control.

Cost effectiveness and the avoidance of duplication of effort would appear to dictate the expansion of EPA analytical facilities rather than new development of an equivalent capability by the Coast Guard. It is estimated that three men, provided with suitable transportation, could witness the sample-taking of approximately 10 percent of all materials other than dredge spoils to ensure that a true representative sample is sent to the laboratory. Such a program of random supervision should provide adequate assurance of compliance with permit conditions. Standard sampling techniques would be required whether the dumper/permittee or Coast Guard personnel actually draw the samples.

Subject: Reply to Senator Hollings letter of 21 May 1975 which transmitted follow-up questions to the 20 May hearings on the Marine Protection, Research, and Sanctuaries Act of 1972

It is our understanding that EPA is standardizing such techniques in conjunction with its development of standard analytical methods. If, for some reason, the samples would have to be drawn by Coast Guard personnel, we expect that these sampling techniques would provide sufficient guidance for a safe and efficient operation.

In summary, we feel that Coast Guard activities with regard to the analysis of material to be disposed of in ocean waters should be limited to random supervision of the sample-taking utilizing EPA-developed standardized techniques. We anticipate meeting with EPA in the near future to discuss sampling/analysis responsibilities, and we intend to request the necessary supplemental resources through the budget cycle.

We hope that this is responsive to your inquiry. If we may be of further assistance, please do not hesitate to contact us.

Sincerely,

E. L. PERRY,
Vice Admiral, U.S. Coast Guard Acting Commandant.

ENVIRONMENTAL PROTECTION AGENCY,
Washington, D.C. July 8, 1975.

Hon. ERNEST F. HOLLINGS,
*Chairman, Subcommittee on Oceans and Atmosphere, Committee on Commerce,
U.S. Senate, Washington, D.C.*

DEAR MR. CHAIRMAN: Thank you for your letter of May 21, 1975, containing questions concerning the Environmental Protection Agency's Implementation of the Marine Protection, Research, and Sanctuaries Act of 1972.

Our responses to the questions are enclosed. I hope this information will be helpful to you and the members of the Senate Commerce Committee.

Sincerely yours,

RUSSELL E. TRAIN,
Administrator.

Enclosure.

Question 1. Minimizing or ending the dumping of toxic wastes is a clear intent of the Act. However, while ocean disposal of industrial wastes in the Gulf of Mexico was reduced from 1973 to 1974, ocean disposal of industrial wastes in the Atlantic increased by over 345 tons. What accounts for this disparity?

Answer. Since the beginning of the permit program, EPA has required a thorough evaluation in all applications of the need for ocean dumping and the availability of alternative methods of disposal, in addition to effects on the marine environment. This approach has encouraged a number of industrial dumpers to seek other alternatives. The two years from 1973 through 1974 represent, in most cases, the time that is has taken industrial dumpers to seek out other alternatives and build treatment plants or implement other methods or waste disposal.

On the Atlantic Coast alone, 47 former dumpers have ceased ocean dumping either before the Act went into effect or after having received permits. Another eight companies have withdrawn their applications or have been denied permits. At least 14 current dumpers on the Atlantic Coast are scheduled to cease ocean dumping in June, 1975, and another eight in June, 1976. The increase in amount of wasters dumped in the Atlantic does not represent new dumpers, but rather industrial growth during which time the companies have been seeking alternatives to ocean dumping.

Question 2. The ocean dumping of sewage sludge has increased by over 1.1 million tons in the Atlantic, but there is no ocean dumping of sewage sludge other than by the cities of New York and Philadelphia. Are the alternate disposal methods of other cities more environmentally sound than ocean dumping, or are they just polluting in a different way?

Answer. Because the sewage sludges tested to date exceed the ocean dumping criteria specified in 40 CFR 227, ocean disposal of sludges from the New York Metropolitan area, Philadelphia, and Camden, New Jersey, is permitted only on an interim basis. This is being done primarily to give these municipalities time in which to seek alternatives other than ocean dumping or, to initiate those programs which would eliminate from the sludge those materials which are harmful to the marine environment. A phase-out date of January 1, 1981, for the State cessation of ocean dumping has been issued to Philadelphia. Region III is reviewing the City of Camden's permit for those alternatives described above. Region II has established a goal of cessation of ocean dumping of sludge by 1981.

Under proper supervision, the use of sludge to make compost, to reclaim strip mined lands, and to make low grade fertilizers, are options to ocean dumping which have proven successful in many instances. We are also studying the use of sludge as a direct application soil conditioner on agricultural lands growing both food and non-food crops. The cities of Chicago, Houston, and Milwaukee are already employing combinations of these disposal alternatives to avoid the discharge of sludge into the Nation's waters. At the present time, we do not feel that the land based alternatives to ocean disposal constitute a form of pollution "in a different way" when carried out under properly designed and supervised programs.

In summary, determining alternatives to ocean dumping of sludge is an important, and time consuming problem requiring significant research and study. Recognizing the importance of this problem, the EPA is expending funds in excess of \$2.5 million annually to investigate the problem of sludge utilization.

Question 3. Philadelphia was placed on a phase-out plan for sludge dumping. Has such an imposition been placed on New York? Are grants available for research to help New York solve the problem?

Answer. EPA Region II has set a goal for phasing out dumping by New York municipalities by 1981. Region II is funding the Interstate Sanitation Commission in the order of \$0.5 million to investigate alternatives to ocean dumping of sludge.

Question 4.a. EPA has monitored the incineration of wastes at sea, and required permitting for such activities under the Act. Has a legal analysis been made concerning EPA's authority to regulate ocean incineration under the Ocean Dumping Act?

Answer. The Office of Enforcement and General Counsel of EPA made the determination that an ocean dumping permit is required for ocean incineration of wastes. This opinion is based, in part, on the recommendations by the counsel to

the House Merchant Marine and Fisheries Committee. A copy of the October 3, 1974, opinion is attached.

Question 4.b. Is there a real environmental advantage in causing air pollution at sea rather than any place else, or is ocean incineration just a temporary measure leading to the day we don't dispose of wastes but reclaim them?

Answer. Under permits issued by EPA, the M/T Vulcanus, a specially designed incinerator ship, burned wastes of the Shell Chemical Company in the first U.S. sanctioned case of ocean incineration. With greater than 99.9 percent efficiency in the combustion of the organochlorine wastes, the stack gases contained predominantly water vapor, carbon dioxide, and hydrogen chloride. The hydrogen chloride in the stack emissions dissolves in the sea water and is neutralized almost immediately to common sea salts.

The results of this first ocean incineration indicate that this may be a feasible alternative to direct ocean dumping. However, any future applications for ocean incineration will be evaluated on a case-by-case basis. A full technical report on the Shell operation is being prepared and will help EPA in evaluating the feasibility of ocean incineration of wastes as a disposal technique to be considered along with other methods of disposal, including recycling.

Question 5. EPA has recently announced its intent to hold hearings on moving the N.Y. sludge dump to an alternate site. NOAA, to date, disagrees with any decision to move the dump site, feeling it is better to pollute only one area rather than two, given a fairly stable situation at the dump site? What is EPA's view?

Answer. Since the permit program became operational, public and congressional pressures, combined with the estimated three-year indication of sludge intrusion on the Long Island beaches, have prompted EPA's Region II to request NOAA's MESA Project to recommend several areas of the New York Bight for an alternate sludge dumping site. As a result and based on NOAA's recommendation, two alternative sites have been designated for additional study.

NOAA, additionally, is charged with the responsibility for Research and Monitoring under Title II of the Ocean Dumping Act. The MESA Project, responsible for research in the New York Bight, recently announced that the sludge dump site should not be moved until additional studies have been conducted in the Bight. EPA is currently conducting detailed studies in one of the areas recommended by NOAA for additional study.

OCTOBER 3, 1974.

MEMORANDUM

To: Arthur Busch, Regional Administrator, Region VI.

From: Alan G. Kirk, II, Assistant Administrator for Enforcement and General Counsel (EG-329).

Subject: Applicability of Marine Protection, Research and Sanctuaries Act of 1972, as amended, to Ocean Incineration of Wastes.

The purpose of this memorandum is to respond to your recent request for a clarification of a previous memorandum prepared by the Associate General Counsel for Water with respect to the applicability of the Marine Protection, Research and Sanctuaries Act of 1972, as amended (the "Act"), to the incineration of waste materials at sea.

In response to an inquiry from the Office of Solid Waste Management, on January 23, 1974, the Acting Associate General Counsel for Water provided a memorandum analyzing the applicability of the Act to ocean incineration and concluding that incineration of wastes at sea could take place without the need for a permit issued by EPA under the Act. Since that time, certain questions have arisen about this memorandum and certain new information has come to our attention which has caused us to reconsider the issue of ocean incineration.

Ocean disposal of wastes is subject to the provisions of the Act and to the provisions of the international Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter (the "Convention"). The act was adopted on October 23, 1972, and the Convention was prepared at a conference held at London from October 30 to November 13, 1972, and ratified by the Senate on August 3, 1973.

The primary purpose of the Act is to regulate the dumping of material into the ocean and to prevent or strictly limit such dumping of material which would "adversely affect human health, welfare, or amenities, or the marine environment, ecological systems, or economic potentialities." Act, Section 2(b). In order to achieve this goal the Act prohibits the "transport from the United States . . . [of] any material for the purpose of dumping it into ocean waters." Act, Section 101. Section 3(c) of the Act defines "material" to mean "matter of any kind or description" and to include without limitation industrial or other waste. Section 3(f)

defines "dumping" to mean "a disposition of material". The legislative history of the Act elaborates this definition by stating Congress' intention that the regulation of "dumping" under the Act would include regulation of "any disposal of material" in the ocean. H.R. Rep. No. 92-361, 92d Cong., 1st Sess. at 16 (1971).¹ The legislative history of the Act also clearly indicates that the Act was intended to be part of an international program to protect the oceans from the adverse effects of ocean disposal of wastes.²

The preamble to the Convention points out that "marine pollution originates in many sources, such as . . . discharges through the atmosphere . . . and that it is important that the States use the best practicable means to prevent such pollution and develop products and processes which will reduce the amount of harmful wastes to be disposed of. . . ." In Article I of the Convention the contracting States pledged themselves to the "effective control of all sources of pollution of the marine environment. . . ." The basic prohibition of the Convention is set forth in Article IV and proscribes "the dumping of any wastes or other matter in whatever form or condition . . ." except as allowed under a permit issued in accordance with the Convention. Article III(1)(a) of the Convention defines "dumping" to mean "any deliberate disposal at sea of wastes or other matter. . . ." Article III(1)(b) excludes from the definition of "dumping" material derived from "the normal operations of vessels" or other craft, the intentional placement of material for a purpose other than disposal and the disposal of material from the offshore exploration, exploitation or processing of seabed mineral resources. However, Article III(1)(b) specifically includes in the definition of "dumping", wastes or other matter "derived from the treatment of such wastes or other matter on such vessels . . ." or other craft.

It has recently come to our attention that offshore incineration has been described in the February, 1974, edition of the journal *Chemecology* as follows:

The incinerators are positioned in the rear of the ship so the fumes will fall astern into the wake as the vessel heads into the wind, thus assuring *maximum mixing with sea water*. (emphasis added.)

This description demonstrates that ocean incineration may in certain cases anticipate, and even rely upon, the mixing of emissions from the incineration with sea water.

In view of the foregoing, it is my opinion that in any case where it can reasonably be anticipated that the incineration of wastes at sea will result in any of such material, or the emissions of the incineration of such material, entering ocean waters, such incineration will constitute a disposition of material in ocean waters subject to the provisions of the Act and the Convention and, accordingly, is prohibited in the absence of an appropriate permit issued under the Act and the Convention. There may, of course, be circumstances involving de minimis emissions from incineration of material at sea where the incineration is incidental to some other lawful activity which may properly be excluded from the Act and the Convention. but such determinations must be made, at least initially, through the regular rulemaking process.

The previous memorandum on this issue is being modified because of our concern that the failure to regulate recently developed waste disposal techniques involving ocean incineration would frustrate the purposes of the Act and the Convention. Moreover, in view of our reconsideration of the question, it is my conviction that ocean incineration was intended to be regulated under the Act and the Convention when it can reasonably be anticipated to cause material to enter ocean waters. In addition, the previous memorandum expressed concern that regulation of ocean waste incineration would require regulation of land-based incineration activities as well. Since the Act regulates *transportation* of materials for the purpose of disposal such a conclusion is not required. "Transportation" is defined by the Act to mean "carriage and related handling of any material by a

¹ A recent letter to the Administrator from Congressman John D. Dingell, Chairman of the Subcommittee on Fisheries and Wildlife Conservation and the Environment of the House Committee on Merchant Marine and Fisheries, reiterates the broad coverage of the Act and states that:

Section 101(a) of the MPRSA clearly bars the unpermitted "transportation from the United States" of "any . . . material for the purpose of dumping it into ocean waters." Since "dumping" means "a disposition of material" (Section 3(f)), this material, when carried out on a vessel for incineration at sea is certainly being transported "for the purpose of dumping it into ocean waters."

² H.R. Rep. No. 92-361, 92d Cong., 1st Sess. at 14 (1971); S. Rep. No. 92-451, 92d Cong., 1st Sess. at 16 (1971). Indeed, the Act was amended on March 22, 1974, for the primary purpose of conforming the Act to the Convention. See, e.g., H.R. Rep. No. 93-568, 93rd Cong., 1st Sess. at 2 (1973). Among other provisions, this amendment included a provision requiring the Administrator of EPA to apply the standards and criteria set forth in the Convention when such application would not result in the relaxation of more stringent requirements imposed under the Act. See Public Law 93-254 at Section 4(A)(iii) (March 22, 1974).

vessel, or by any other vehicle, including aircraft." The ocean fall-out of pollutants from the atmosphere attributable to land-based sources does not constitute "transportation" within the meaning of the Act.

ALAN G. KIRK, II.

NATIONAL WILDLIFE FEDERATION,
Washington, D.C., March 11, 1975.

COMMENTS OF THE NATIONAL WILDLIFE FEDERATION ON THE FEBRUARY 18, 1975
DRAFT REVISIONS TO EPA'S OCEAN DUMPING CRITERIA (40 C.F.R. PART 227)

1. We endorse the change in subsection (a) of draft section 227.2 (wastes which satisfy the environmental impact criteria of subpart B), which places the burden of showing need, lack of alternatives, and absence of unacceptable adverse effects on the permit applicant.

See Comment 1 of our January 24, 1975 submission [hereinafter, "previous comments"].

2. We endorse the intent of the change in subsection (c) of draft section 227.16 (basis for determination of need for ocean disposal), which seeks to avoid the implication (present in the previous draft) that "need for and alternatives to ocean disposal" (and not also "environmental impact" considerations) are to be the only bases for requiring permittees to terminate or phase out ocean disposal.

This change is responsive to Comment 2 of our previous comments. We would, however, suggest a slight refinement in the working of lines 2202-2203, as follows: "Notwithstanding compliance with Subparts B, D, and E of this Part 227, permittees may, on the basis of the need for an alternatives to ocean disposal, be required to . . ."

3. The failure to revise the language of draft section 227.4 (criteria for evaluating environmental impact) as recommended in Comment 3 of our previous comments, retains the impermissible implication that the environmental impact criteria of Subpart B are the *sole* determinants of the "reasonableness" of any marine environmental degradation or human health endangerment caused by ocean dumping.

See previous Comment 3.

4. Draft section 227.5 (prohibited materials) retains the previous draft's weak subsection on insufficiently described materials, but it slightly strengthens the previous draft's subsection on floating or suspended persistent inert materials.

See previous Comment 4.

Although subsection (d) deletes the previous draft's blanket exemption for suspended solids present in municipal sewage sludges and effluents from the "floating waste" prohibition, it substitutes another (in some ways broader, in some ways narrower) exemption: an exemption for all floating wastes which do not float "in such a manner that they may interfere materially with fishing, navigation, or other legitimate uses of the ocean." The new draft version is an improvement in that it does not totally exempt all sewage sludges and effluents. However, it does still represent a substantial weakening of section 227.21(d) of the present final ocean dumping criteria. We would be willing to endorse this change, nevertheless (as consistent with the Ocean Dumping Treaty), if the requirement of "material" interference (line 1839) were deleted.

5. Draft section 227.6 (waste constituents prohibited as other than trace contaminants) continues to create more problems than it solves.

In Comment 5 of our previous comments, we pointed out a number of difficulties with the previous draft's treatment of the "trace contaminants" question. We noted that the definition adopted by EPA was impermissible based on the letter and intent of the Ocean Dumping Treaty, the generally accepted understanding of scientists, and common sense. EPA's response in the new draft has been to not even attempt to define (explicitly, at least) the phrase "trace contaminants". Unfortunately, this does nothing to solve the problem. Whether the phrase is defined explicitly or operationally, the significant fact is that EPA's draft section 227.6 would allow the ocean dumping, under both special and interim permits, of waste types and quantities the dumping of which are clearly prohibited by the Ocean Dumping Treaty. An acceptable version of section 227.6 must take account of the following considerations:

(a) Open ocean (i.e., seawater) concentrations of cadmium and mercury, as determined by IDOE baseline studies,¹ are 0.02 and 0.1 micrograms per liter (parts per billion), respectively. This compares with an EPA standard for liquid waste phases of 3.0 and 1.5 milligrams per kilogram (parts per million), respectively—or, 150,000 (5 orders of magnitude) and 15,000 (4 orders of magnitude) times ambient seawater levels. Even taking the highest “typical” reported² open ocean cadmium and mercury concentrations of 0.7 and 0.2 micrograms per liter, respectively, the EPA liquid phase standard is still 4,285 and 7,500 (4 orders of magnitude) times greater than ambient levels.³

(b) Ocean sediment concentrations of cadmium and mercury have been reported⁴ to typically range around 205 micrograms per gram (parts per million) for cadmium and from 0.05 to 3.0 micrograms per gram for mercury. The average cadmium content of “deep sea clays” is elsewhere⁵ reported as 0.5 ppm. For (terrestrial) sedimentary material generally, average cadmium levels are said⁶ to range from 0.05 ppm for limestones and sandstones to 1.4 ppm for shales and clays. Given the variability inherent in these numbers, the EPA solid phase limits for cadmium and mercury, 0.6 and 0.75 milligrams per kilogram (parts per million), do not appear to be unreasonable and could justifiably serve as part of a definition for “trace contaminants”.

(c) The National Academy of Sciences’ Environmental Studies Board, Committee on Water Quality Criteria, has recently concluded that “concentrations of cadmium equal to or exceeding 0.01 mg/l [parts per million] constitute a hazard in the marine environment as well as to human populations, and levels less than 0.2 ug/l [parts per billion] present minimal risk of deleterious effects.”⁷ It was further concluded that “concentrations of mercury equal to or exceeding 0.10 ug/l [parts per billion] constitute a hazard in the marine environment.”⁸ The EPA liquid phase limits of 3.0 and 1.5 ppm for cadmium and mercury are, respectively, 300 and 15,000 times higher than the hazard levels for these two materials. (In the case of cadmium, the 3.0 ppm limit is 15,000 times the “minimal risk” level).

(d) Although ocean-dumped cadmium- and mercury-containing wastes will be subject to some (variable) degree of mixing, the rationale of subsection (b)(3) of draft section 227.6, which looks to the toxicity of organohalogen, carcinogenic mutagenic and teratogenic waste constituents, “without regard to dispersion in the mixing zone”, should apply equally to mercury and cadmium compounds.

(e) Based on the above, a reasonable liquid-phase limit for cadmium and mercury present as “trace contaminants”, would be in the neighborhood of 0.1 part per million for cadmium and 1 part per billion for mercury. A standard of this kind is not out of reach even for municipal sewage sludges. The present solid-phase standards could remain unchanged (possibly limited to hydrochloric-acid extractable material, so as to exclude insoluble constituents).

(f) The section will have to be redrafted to incorporate these (and the other) numerical limits within the “trace contaminants” definition. If no explicit definition is provided, the operational “definition” will have regard compliance with these limits as prerequisites to the receipt of any type of ocean dumping permit.

We applaud and endorse the addition of “carcinogenic, mutagenic, [and] teratogenic” compounds to the section 227.6 “black list”. The implementation of this addition, however, will require the design of suitable special screening tests, different than and distinct from the general marine bioassay procedures. We urge EPA to consider the approach of the Environmental Mutagen Society in a recent publication.⁹

¹ Goldberg, E. D. (Convener). 1972a. Baseline studies of heavy metal, halogenated hydrocarbon, and petroleum hydrocarbon pollutants in the marine environment and research recommendations. Deliberations of the International Decade of Ocean Exploration (IDOE) Baseline Conference May 24–26, 1972. Page 2.

² Goldberg, E. D. (Convener). 1972b. Marine pollution monitoring: strategies for a national program. Deliberations of a workshop held at Santa Catalina Marine Biological Laboratory of the University of Southern California, Allan Hancock Foundation, October 25–29, 1972. Page 76.

³ One recent reference gives the average seawater concentrations of cadmium as 0.113 and 0.03 micrograms per liter respectively. Smith, F. G. W. (ed.). 1974. Handbook of Marine Science. Vol. 1. (CRC Press, Cleveland, Ohio): 10–11.

⁴ Goldberg, E. D. (Convener). 1972b. *Supra*, note 2, page 99.

⁵ National Academy of Sciences. 1974. Geochemistry and the environment. Vol. I. The relation of selected trace elements to health and disease. (A report of the workshop at the Asilomar Conference Grounds, Pacific Grove, California, February 7–12, 1972). Page 4.

⁶ *Id.*

⁷ National Academy of Sciences. 1973. Water quality criteria. 1972. (EPA-R3-73-003-March 1973): 246.

⁸ *Id.* at 252.

⁹ Environmental Mutagen Society. 1975. Environmental mutagenic hazards. *Science*, 187: 503–514.

6. Although the present draft section 227.6 (waste constituents prohibited as other than trace contaminants) corrects several of the typographical errors of the previous draft, most of the defects identified in our previous Comment 6 remain, and a few new ones are added.

See previous Comment 6.

In addition, subsection (a)(4) should be revised so as to cover oil transported for the "primary purpose" and not merely for the "purpose" of dumping. This would avoid an interpretation that ocean dumping must be the exclusive purpose before section 227.6 would come into play.

Subsections (b)(1) and (b)(2) should be revised to insert the verb "is" between the word "waste" and the word "less" on lines 1873 and 1878.

Subsection (b)(4) should be corrected to substitute the verb "do" for the verb "does" on line 1819.

Subsection (c) should be revised to make clear that the indicated special studies may be required *before* any ocean dumping permit is issued.

7. Previous Comment 7, relating to amendment of the ocean dumping criteria, remains unresolved.

See previous Comment 7.

8. Previous Comment 8, relating to the criteria for ocean dumping of dredged material, remains unresolved.

See previous Comment 8.

We trust that deletion of the "standard elutriate test" description from subsection (b)(3) does not signal an effort to further weaken the test procedures.

We note with approval that mercury and cadmium have been added to the list of "major constituents" which must be analyzed in all cases, but regret that "organohalogens" remain off the list. We urge that at least a quantitative (if not qualitative) organohalogen analysis be required in all instances.

9. Draft section 227.7 (limits established for specific wastes or waste constituents), satisfactorily provides the clarification sought by our previous Comment 9.

See previous Comment 9.

10. Previous Comment 10, relating to living organisms present in sewage sludges, remains unresolved.

See previous Comment 10.

The deletion of an exemption for ocean-dumped sewage sludges is particularly important in view of the proposed removal by EPA of the disinfection requirement presently contained in the "secondary treatment" definition. See, Draft "Secondary Treatment Information [40 CFR Part 133]" and Draft "Domestic Wastewater Disinfection" Policy. See also, Draft Task Force Report on "Disinfection of Wastewater", January 1975. The National Academy of Sciences Water Quality Criteria Report states: "The potential presence of pathogenic bacteria and viruses must be considered in waters receiving untreated or treated municipal sewage effluents. The present water quality standards for fecal coliform counts . . . should be observed." (Page 278).

The need for close regulation of bacteriologically-contaminated sludge dumping is underscored by information in another National Academy of Sciences Report ("Assessing Potential Ocean Pollutants", 1975: 245-248). Sewage sludge dumped in the New York Bight contains fecal coliforms numbering up to 2.4×10^6 per 100 ml. Not only have bacteria been shown to survive in both particulate matter and marine muds, but Pearce has found high coliform and fecal coliform levels in marine sediments in the New York Bight in the vicinity of the sludge dumping site. Massive coliform contamination of clams harvested in the vicinity of the New York Bight sludge disposal site has been found. And there are indications that pathogenic *Salmonella* bacteria may remain viable in ocean-dumped sewage sludge. (Finrot disease in fish and shell ulceration in crabs and lobsters may also be linked to bacterial contamination of sewage sludge dumped in the New York Bight).

In short, there is no legal or environmental justification for threatening bacteria-contaminated sewage sludge any differently from any other waste material proposed for ocean dumping.

11. Subsections (d) and (e) of draft section 227.7 retain unresolved the problem identified in previous Comment 11.

See previous Comment 11.

12. Draft section 227.8 (limitations on the overall toxicity of wastes), retains unresolved the important problem identified in previous Comment 12.

See previous Comment 12.

We cannot overemphasize the critical importance of chemical analyses of waste materials, even where bioassays are being carried out on the aggregate waste. Without close scrutiny of a waste's mix of chemical constituents it is impossible to predict pharmacological and public health effects, biodegradation and bioaccumulation potential, likelihood of synergistic interaction with other wastes, etc. It also precludes reliance on toxicological studies of other wastes with similar or identical significant constituents. We again urge inclusion of a separate *chemical* analysis requirement.

13. Draft section 227.11 (containerized wastes) remains ambiguous and inadequate. See previous Comment 13.

14. Subsection (c)(5) of draft section 227.15 (factors considered) satisfactorily responds to our previous Comment 14.

See previous Comment 14.

15. Subsection (a)(2) of draft section 227.16 (basis for determination of need for ocean disposal) satisfactorily responds to our previous Comment 15.

See Comment 15.

16. Draft sections 227.2, 227.3, 227.17, etc. remain ambiguous and inadequate in their use of the phrase "environmental impact criteria of Subpart B".

See previous Comment 16.

17. Draft sections 227.17 (basis for determination) and 227.18 (factors considered), although they have been trimmed of various ambiguous language, have also been trimmed of much of their previous substance.

See previous Comment 17.

The redraft suffers from doing no more than providing general guidance. There must be more or less specific criteria that have to be met before a permit will issue.

18. Draft sections 227.23 (general requirement) and 227.25 (contents of plans) do nothing to satisfy the serious problem raised by previous Comment 18.

See previous Comment 18.

19. The definition of "release zone" contained in subpart a of draft section 227.28 eliminates some of the potential for abuse noted by previous Comment 19.

See previous Comment 19.

20. Although no general "burden of proof" provision has been provided as urged by previous Comment 20, subsection (a) of draft section 227.2 does adopt the right approach—at least with regard to the Subpart B criteria.

See previous Comment 20.

21. Subsection (b) of draft section 227.1 (applicability) should be revised to avoid the implication that permit applications will be evaluated solely on the basis of "information supplied by the applicant".

Line 1700 should be revised accordingly.

22. The deletion of the April 23, 1978 cut-off date for the issuance of interim permits (subsection (b) of draft section 227.2, draft section 227.3, draft section 227.26), once again returns the situation to one with no checks on the indiscriminate and unending award of arbitrary and loosely conditioned permits.

EPA is well-aware of the National Wildlife Federation's position in this regard. If no informal compromise is possible, a Federal judge may have to resolve the question of the legality of EPA's non-interim "interim" permit system.

32. Subsection (a) of draft section 227.3 (wastes which do not satisfy the environmental impact criteria set forth in Subpart B) should be revised to avoid the implication that section 227.6 materials ("other prohibiteds") may be dumped as "trace contaminants".

Lines 1766-1768 should be revised to read: ". . . any of the materials listed in Section 227.5, except as trace contaminants, or any of the materials listed in Section 227.6."

24. Draft section 227.7 (limits established for specific wastes or waste constituents) should be revised to (a) restore the restriction on dumping of "toxic pollutants" and "hazardous substances", and (b) render subsection (b) intelligible.

The present draft entirely deletes the very salutary language of lines 1854-1859 of the previous draft regarding dumping or discharge of "toxic pollutants" and "hazardous substances" regulated under the FWPCA. We regard this change as unsatisfactory and unjustifiable.

Subsection (b) is entirely ungrammatical and unintelligible as presently constituted.

25. Subsection (d) of draft section 227.7 (limits established for specific wastes or waste constituents) should be revised to make clear that the 10 per cent limit on alkalinity and acidity changes applies not only to individual disposal

operations but also to the aggregate impact¹ of multiple operations being carried out at a dumping site.

If 10 dumpers are allowed to each produce a 10 per cent change in acidity, the 10 per cent limit has no meaning at all.

26. Subsection (f) of draft section 227.18 (factors considered), dealing with toxic and bioaccumulative waste constituents should be expanded and clarified.

The present language of this subsection, frankly, makes no sense. If "toxic" waste constituents must be considered, what is added by requiring consideration, in addition, of "bioaccumulative and toxic" waste constituents? Something must have been lost in the translation.

Now, it is true, as pointed out in the National Academy of Sciences' report on "Assessing Potential Ocean Pollutants" (p. 5), that: "Materials that are persistent and toxic, persistent and bioaccumulated, or persistent and released in large volume, should have high priority for attention." If this is what was intended by subsection (f), why doesn't it say so? We urge that this subsection be revised to require consideration of the indicated three categories.

27. Subsection (b) of draft section 227.27 (limiting permissible concentration) has been weakened by deletion of the requirement that bioassay test species should "normally inhabit an ocean region having chemical and physical characteristics similar to those of the dumpsite".

We urge that the subsection be revised to at least require that: "To the fullest extent possible, test species shall be those which normally inhabit an ocean region having chemical and physical characteristics similar to those of the dumpsite (prior to the onset of dumping)". It must be made clear that estuarine and coastal organisms which have acclimated themselves to conditions of environmental stress are seldom, if ever, either "appropriate" or "sensitive" test organisms for dumpsites ten or more miles from shore.

[From the Times-Picayune, New Orleans, La., Feb. 16, 1975]

EPA To FORCE DUMPING SHIFT

(By Peter J. Bernstein)

WASHINGTON.—The Environmental Protection Agency (EPA) is preparing to issue regulations that will force most ocean dumping of municipal and industrial sewage sludge to be done further out to sea.

Among dump sites to be abandoned is the odious "dead sea" graveyard in the New York bight, an area 12 miles beyond the entrance to New York harbor that once abounded with marine life but has since been rendered biological inert as a result of more than 50 years of dumping.

In place of the bight, EPA plans to designate a new dumping site in a relatively clean area of the Atlantic Ocean about 40 miles southeast of the Long Island shore.

Plans for shifting the New York dump site and others were disclosed by T. Allen Wastler, chief of EPA's Marine Protection branch. He said in an interview that regulations for ocean dumping will be issued to "two or three months" and cover monitoring of sites as well as their management.

The shift away from the New York bight will take place by the middle of next year, he said, "unless environmental studies of the new area off Long Island produce some good reasons for not making the change." He said the new sites will be between two and ten square miles. The present dump site in the bight is about two square miles, although an area of the ocean bottom extending 50 mile south along the New Jersey shore is covered with black goo.

Sludge from the entire New York metropolitan area, including most of New Jersey, will be dumped at the new site.

Presently, there are 14 offshore disposal sites for municipal and industrial sewage sludge, and at least some of these are due to be abandoned either because they are located too close to shore or because they interfere with commercial fishing. Ten existing dump sites are strung along the Atlantic edge north of Philadelphia. Two other are in the Gulf of Mexico, one off Puerto Rico and one in the Pacific. None are located in the Great Lakes.

Though the number of dump sites has declined since passing of the 1973 ocean dumping law, which was designed to place stringent controls on dumping, the amount of waste being dumped is believed to have increased sharply. EPA officials attribute this increase to added sludge being produced as a result of development of new municipal waste treatment plants.

The "dead sea," for example, now receives six million cubic yards of wastes each year, equivalent to 1.2 billion gallons, which is hauled by barges.

By 1977, the volume is expected to triple to more than 3.5 billion gallons as more secondary sewage treatment plants start operating in the New York area. One sewage plant that will be the largest in the world is now under construction on the New York bank of the Hudson River, just a mile from Times Square. It will eventually treat wastes for all of Manhattan.

Wastler said EPA, in promulgating new rules for ocean dumping, hopes to give impetus to development of alternative methods for disposal. One promising method, he said, is incinerating sewage sludge aboard specially equipped ships at sea.

This approach, which was successfully tested in the Gulf of Mexico last year, has considerable advantages over land-based incineration, with its inherent air pollution problems. Several cities in West Germany and Holland now burn their sludge at sea.

This is considered one near-term alternative to ocean disposal off Philadelphia, Wastler said, noting that the EPA regional office in that city has ordered an end to dumping by 1981. But he added that EPA does not intend to force an end to ocean dumping in most other places. "At a time when we are rapidly closing every avenue of escape for garbage wastes," he said, "we are going to discover that, from an environmental standpoint, the ocean is the best place to put them."

To pinpoint the best area off Long Island for the new dump site, EPA has hired an environmental consulting firm to conduct "baseline studies" to determine exactly what conditions are like there now, and how they may be changed after sludge barges start dumping vast quantities of wastes. The research is expected to be completed in June, and the exact site will be designated soon thereafter.

Wastler said the site southeast of Long Island was one of two potential sites recommended to EPA by the National Oceanographic and Atmospheric Administration, a branch of the Commerce Department. The other site was about 40 miles east of the New Jersey shore.

The Long Island site was chosen for intensive environmental study for two reasons, he said. For one thing, the ocean bottom off New Jersey contains large deposits of sand and gravel that could be used for shoreside construction in coming years. For another EPA had only enough money to study one offshore area. So it selected waters off Long Island.

[From the Times-Picayune, New Orleans, La., Jan. 17, 1975]

EPA NOT MONITORING OCEAN DUMPING

(By Cornelia Carrier)

The U.S. Environmental Protection Agency is not monitoring ocean dumping, but is taking the word of the industry and barge operator involved that correct procedures are being followed, it was revealed at a hearing Thursday.

Toward the end of what seemed a routine EPA hearing on a dump application from Ethyl Corp., Baton Rouge, a consultant for the company explained that some drums containing sodium calcium sludge exploded below the surface of the water.

Ethyl proposes to dump 800 drums of sludge per month at a site 45 miles south of Southwest Pass. Each drum is supposed to be punctured six times before disposal in order to facilitate rapid reaction (a form of explosion) of the toxic sludge with water to form sodium calcium hydroxide, termed "innocuous" by both EPA and Ethyl officials.

However, the consultant's statement that the reaction can occur below the water surface raised the question of whether some drums might not explode at all.

Questions of concern from EPA officials brought to light the fact that the agency responsible does not monitor ocean dumping procedures.

James Lytal, president of Lockport Chemical Co., which barges Ethyl's wastes, said that 60 percent of drums explode "right underneath the surface."

James Doyle, director of the enforcement division of EPA's Region VI, asked if there was "any assurance that it won't be days, weeks or months" before some of the drums explode.

Lytal responded there was no assurance and that no log was kept about which drums exploded.

James H. Huguet, industrial conservation coordinator for Ethyl, said it was "unlikely" there were any unexploded drums on the bottom of the dump site.

Huguet told the hearing board there had been no scientific study of exactly what happens to the drums below the surface of the water, but that there had been "no problem in the last eight years." Ethyl has been dumping in the Gulf since 1956.

However, Doyle said he was "somewhat distressed that we don't have the assurance we thought we had all along that the drums explode."

He asked if any other industry had conducted a "strictly scientific" study of what happens to unexploded drums, and Huguet replied, "Not to my knowledge."

Later, George Snow, executive director of the Louisiana Shrimp Association, said EPA officials questions seemed to indicate there was no EPA monitoring of ocean dumping and that the agency is "accepting the contractor's word."

Doyle replied that, although EPA "should physically monitor" the dumping, it had not been doing so because of lack of staff.

[From the Christian Science Monitor, Mar. 13, 1975]

PROTECTING WORLD'S OCEANS

SECRECY ATTACKED BY SCIENTISTS

(By David F. Salisbury)

If coastal oceans and inland seas like the Mediterranean are to be saved, nations and industries must start revealing more about the chemicals they dump into coastal waters.

This undercurrent ripples through a new National Academy of Sciences report, although it was deliberately played down by the authors. The study, titled "Assessing Potential Ocean Pollutants," pioneers an attempt to predict marine pollution problems ahead of time.

Privately, many of the contributing scientists are pessimistic about the study. They fear it will not be given much priority by the world's regulatory agencies because it attempts to stave off a future crisis rather than solve what they see as a present one.

DETAILED DATA NEEDED

The report lays down what its authors feel is a workable and not too expensive method for pinpointing which substances, contained in the chemicals man dumps into the sea, can damage the marine environment.

The cornerstone of this method involves knowing the amounts of these substances and how—thrown, poured, rinsed, or dumped—they end up in the ocean.

Repeatedly, though, scientists have found that this information is considered classified by many governments—and especially by industry.

"We have found that when you have a reason, it is not too difficult to get statistics from governments. But we are pessimistic about persuading industry," says Dr. Vaughan Bowen, who was on the steering panel.

In the past, scientific studies have followed on the heels of ecological disaster. Today ocean scientists are anxiously awaiting signs that the fisheries in the Baltic and North Sea or off the U.S. coastlines are deteriorating because of the growing pollution. The Mediterranean is reportedly dying, but the reasons are poorly documented.

Some experts, like ocean explorer Jacques Yves Cousteau, think that all the oceans are in danger. But according to Dr. Bowen, of Woods Hole Oceanographic Institution, most marine scientists put such a widespread disaster far in the future. It is only coastal and inland ocean areas which they feel are in imminent danger.

DANGERS MAGNIFIED

Besides quantity, other characteristics of a substance contribute to its hazard. The longer its lifetime, the more it will accumulate. If it concentrates physically, at the sea surface for instance, its effects will be magnified. Chemicals that build up in the food chain must be particularly guarded against.

The panel found two substances that represent particular hazards.

Plutonium, an element created by nuclear reactors, is the most dangerous. This is dumped into the ocean as a liquid by the British, and the Nuclear Energy Agency of the Common Market disposes of plutonium-containing solid waste in a similar fashion. The report urges extreme caution and an intensive scientific study into the effects of this practice.

Also hazardous, especially in estuaries, is a chemical used to kill fungus in grain and as a sheep dip. Called hexachlorobenzene, this is a major by-product of a number of chemical processes. It persists in the ocean and has been shown to be toxic at low concentrations.



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